Managing sustainability through architectural design decision processes: influences of values and frames

RICHARD PERRY KULCZAK-DAWKINS

A thesis submitted in partial fulfilment of the requirements
of the University of Brighton for the degree of
Doctor of Philosophy

April 2021
University of Brighton

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Abstract

In Architecture, Engineering, and Construction (AEC), the management of project sustainability impacts is driven by both mandatory regulations, and by individual commitments which imply acceptance by choice through conscious decision. Despite initial willingness, project sustainability outcomes can betray expectations and potential, with opportunities missed for improvements on baseline regulations. Where regulations leave room for more personally-meaningful decision-making opportunities towards sustainability, previous studies showed that cognitive limitations and non-technical barriers contribute to achieving lower sustainability standards than intended, or possible. However, empirical research is scarce on the role of linking underpinning human influences with decisions—potentially protecting decision-making opportunities which support more individually-meaningful, contextualised choices towards longer-term goals. Importantly, these types of discussions dominate final outcomes of (un-) sustainability in AEC projects, and more sustainability-biased solutions may require better decision-options linked to stakeholders' values.

Adopting a case-based grounded approach, a theoretical framework and analytical lens used human values—as conceptions of most worthwhile, meaningful, and significant ideals or goals—overlaid on communication frames—as both representations and sources of meaning. The overall aim was to first identify and map their influences in typical decision-making discussions impacting sustainability, then find where any opportunities for meaningful choice survives or can thrive. Through interviews, focus groups, and questionnaires, architect-client discussions were explored from architect's perspectives. To track how values and frames influenced decision-making, values-influence pathways were mapped via frames to decisions in client-project cases.

The main findings showed how spaces for meaningful choices were made and opportunities spent when frames met values with varying compatibility based on the individual, values-based meaningfulness of framed sustainability decision-problems and associated choice-options. Numerous architects were tacitly identifying client values then 'framing to values' for decisions favouring sustainability during early, more aspirational briefing and design stages. Problematically, it unexpectedly emerged that later frames of critical challenges found in all cases typically activated less-supportive and higher-priority values associated with cost/profit, benefit, risk, loss, conflict or complexity to elicit unfavourable decisions, where sustainability measures normally reduced from initial agreements. This means that together 'values-and-frames' play significant but typically unacknowledged roles in sustainability decision-making. When heeded, values-and-frames can be harnessed for improvements to the interpersonal spaces for stakeholders to make more individually-meaningful, values-based sustainability choices. Such decisions are more likely to endure by coordinating decision-problem and choice-option frames with decision-makers' values. The findings contribute new insights toward knowledge of how values-and-frames interactions both constrain and can improve deciding about architectural sustainability.

Keywords

architectural design management; communication framing; decision-making processes; frame analysis; human values; influences; sustainability

Declaration

I declare that the research contained in this thesis is the original work of the author. The thesis has not been previously submitted to this or any other university for a degree, and does not incorporate any material already submitted for a degree.

WORD COUNT: 79,904

Signed

Dated

28 April 2021

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Dedication

This PhD is dedicated to my son, Lucas.

May he and other young pioneers be inspired to lead us towards a more sustainable coexistence with our planet, and each other, despite the challenges.

This work is also dedicated to the youth of today and tomorrow, and anyone underrepresented and overburdened by global, national, and local inequities.

May we all make better decisions to ensure this earth remains sustainable for all species, in perpetuity.

Acknowledgements

To my wonderful supervisors, Dr. Poorang Piroozfar and Prof. Dr. Marie Harder, I owe a monumental and unpayable debt of gratitude for your tremendous insightfulness, guidance, encouragement, and support throughout my journey—thank you. This research would have been impossible without your dedication and valuable counsel, particularly in the most difficult and challenging times. Special appreciation and my deepest, most heartfelt thanks go to you both.

Very special thanks to my examiners; I am tremendously grateful for the opportunity to discuss this work in depth with you.

Huge thanks goes to the WeValue team Gemma Burford, Dr. Elona Hoover, and Firooz Firoozmand, who introduced me to and guided me through the complexities of values research, with particular thanks to Firooz for all his guidance and support in developing my skills in recognising, eliciting, and analysing values, which helped me to identify the frames used to express values.

To all the participants of the research, this work would have been impossible without you having shared all your tremendous experiences and insights into the intricacies of framing and decision-making for sustainability in your practice and projects. I am profoundly grateful—thank you.

To all my work friends, colleagues, and employers throughout my journey, thank you for all your support and encouragement. You have helped me to maintain perspective and retain a positive mental attitude, for which I am incredibly grateful. To all the team University of Brighton and School of Environment and Technology who have helped me through various challenges along my journey, with particular thanks to Edward Rhodes.

Special thanks goes to my wonderful friends with whom I've shared the journey, Dr. Yahya Ibraheem, Dr. Nagham Al-Qaysi, Dr. Emanuele Sozzi, Dr. Francesco Pomponi, Dr. Janet Yakubu, Dr. Laura D'Amico, Dr. Emmanuel Aboagye-Nimo, Dr. Elona Hoover, Dr. Bastian Schnabel, Dr. Adeni Abigo, Dr. Mohammad H Al-Majidi, Dr. Salam Alrekabi, Dr. Mario Rodrigues Peres, Dr. Oday Mahmoori, Dr. Benyamin Rasoul, Dr. Abbas Al-Ameeri, Dr. Bahar Esfahani, Dr. Peshawa Al-Jaf, Dr. Johan Coronado, Dr. Mohammed Al-Khadim, Musa Jato, Mohammed Alaqad, Isa Kwabe, Michela Menconi, and Adora Udechukwu—you have all contributed to an infinitely more enjoyable journey! Thank you!

These acknowledgements would be incomplete without extending my gratitude to the Doctoral College and team behind the Researcher Development programme, with special thanks to Neil Ravenscroft, Susan Sandeman, Mark Erickson, Sarah Longstaff, Shahena Begum, and most recently Ursula O'Toole.

Thank you all!

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Chapter 1 Introduction

1.1 Chapter introduction and thesis overview

Humanity currently faces significant challenges of our own making: anthropogenic global environmental change, mass urbanisation, habitat and species loss, environmental degradation, overconsumption, excessive waste, and resource depletion are happening (Cribb, 2016; Ripple *et al*., 2019). Efforts to alleviate human-induced global degradation have been characterised and captured with the broad ideas of sustainability and sustainable development as organising concepts of human endeavours internationally (e.g., UNSDG, 2020). In built environment development, sustainability and 'green' building issues might concern and inspire some people, whilst others may remain preoccupied or disinterested, suggesting missed opportunities to give serious, thoughtful, and deliberative consideration to longer-term sustainability and environmental issues. This includes the impacts of everyday decisions on broader social-ecological systems and earth's critical thresholds (Haughton and McGranahan, 2006; Adger and Jordan, 2009). Meaningful deliberation and choices about sustainability can be confounded by competing interests and priorities at multiple levels in project planning and design (Delgado and Shealy, 2018), particularly those involving cost or disagreement (Cole, 2000; Crocker and Lehmann, 2013).

For built environment professionals and clients employing deliberative consideration, their decisions may lack sufficient 'root'—retention, permanence, ownership—during and after any emerging issues and changes (Laurian, 2009). This could be because some aspects of human behaviour may restrict the potential to develop more robust, long-lasting decisions about project sustainability and pathways to facilitate and manage them (Johnson, 2012; Marx, 2012, Klotz, 2018). If efforts to mitigate unsustainable impacts are not incorporated early in development projects, then these missed opportunities may lock projects (and 'beneficiary' communities) into unsustainable trajectories, e.g., from immediate, local impacts to long-term wider-scale degradation to societal and earth systems

(Cole, 2000; Leach *et al.*, 2010). In research, incorporating and managing the human inputs and impacts of early development decisions on broader project decision landscapes and outcomes is seldom addressed holistically in sustainability literature concerning Architecture, Engineering, and Construction (AEC). This is potentially because the human, interpersonal factors involved in built environment sustainability decisions are fundamentally complex, dynamic, interactive, deeply embedded, both technical and non-technical, cross-disciplinary, and difficult to access.

Therefore, new research is needed to understand potentially key, foundational components in interindividual interactions, beginning with early decision-maker engagement, briefing, and design decision-making processes. This strategic phase of project planning and procurement presents the greatest opportunity for change whilst simultaneously facilitating the potential for greatest end-impacts (N.I.B.S., 2012). In this stage, parties can also attempt resolution of competing interests and priorities at multiple levels (Delgado and Shealy, 2018). However, design and construction projects are subject to changes through the development's lifespan (Ibbs *et al.*, 2001) which may reduce overall sustainability from initial intentions. If sustainability was introduced and robustly established through better links to foundational drivers and behaviours in project decision-making processes, it is expected that sustainability may then be more likely to take root and endure as projects develop and change. From this rationale, a qualitative exploratory research pathway was designed, with the underpinning intention to improve project sustainability outcomes from architectural decision-making processes. This chapter sets up the research problem, context, and thesis structure in §1.1.1-1.1.4; then introduces the research scope, design, foundations, and structure in §1.1.4-1.4.

1.1.1 Research context and problem

The global move towards human-ecological sustainability with its drive towards sustainable building and the mitigation of impacts is manifested through both aspirational and statutory instruments (e.g., UNFCCC 1992-2015; UNEP-SBCI 2020; NPPF 2012-2019). The design, construction, and maintenance of buildings have significant impacts on long-term sustainability (deWit *et al*., 2020; UNEP-SBCI, 2006-2020). Building's impacts are mitigated incrementally by changes to planning legislation (cf. NPPF, 2012; NPPF2, 2018-19) and building regulations (Hamza and Greenwood, 2009; Gibbs and O'Neill, 2015), as well as market competition and opportunity (Harty *et al*., 2007). However, regulatory instruments are subject to various interpretations by not only officials, but also project clients and stakeholders (e.g., Upham, 2000; Rodriguez-Melo and Mansouri, 2011; Birkeland, 2012; Raslan, 2018).

Where requirements are not legally binding, there is a reliance on goodwill or an aspirational component associated with the concept of '*acceptance by choice through conscious decision*', a concept suggested by Qian *et al*. (2012) and similarly but separately by Hes and duPlessis (2015) and Zhang *et al*. (2019), e.g., by commissioning clients or architects. However, any opportunity for 'choice through conscious decision' could be easily obscured by a wide range of competing, non-technical factors that have potential to confound decision-making, even when it is initially well-meaning for sustainability. The many, seemingly-subtle barriers known to have disproportionate influence include heuristics, biases, stereotyping (Klotz *et al*., 2018; Klotz, 2011); prevarication, inattention, and short-termist goals (Williams and Dair, 2007; Dowson *et al*., 2012); and general unwillingness (Weber, 2017). Because of seemingly inconsequential cognitive processing limitations, personal communication styles or idiosyncrasies (Johnson *et al*., 2012; Marx and Weber, 2012), clients may even end up with projects which actually contribute to *unsustainability*, e.g., through unseen impacts or 'sunk' environmental costs (Klotz

et al., 2018; Shealy *et al*., 2019). Except within direct regulations, the meaning and interpretation of sustainability remains contested (Lankoski, 2016; Schroeder, 2018), and can easily appear to construction clients and decisionmakers as unappealing (Rodriguez-Melo and Mansouri, 2011), full of impenetrable abstractions about distant possibilities (Maser, 2012), and devoid of context and individual meaningfulness, leading to discounting futures (Voinov and Farley, 2007; Weber, 2017). Building sustainably thus faces substantive barriers and inherent constraints such as these, which ultimately contribute jointly to only meeting minimum sustainability regulations (*ibid*. 2007, 2012). This is despite considerable awareness and understanding from building designers and construction professionals about practical processes and technological solutions associated with sustainability (Higham and Thomson, 2015).

The net impact of these various diversionary factors is that unless regulations insist on them, sustainability achievements are likely to be hindered because they may lack strong personal motives, values, or responsibility for issues associated with sustainability. As will be explained below, it later emerged that such hindrances suggest that the particular type of decision 'space' that is required to establish sustainability's roots more meaningfully in decision-making is not usually provided. Since concepts of sustainability always require localisation and local interpretation before they can take form (Harder and Burford, 2018), they may be implicitly biased-against in any decision-making processes which lack an explicit opportunity for some kind of intentionally balanced or holistic consideration. Such possibility can be called *'space for meaningful choice'* because it would involve the decision-makers consciously considering what sustainability means to them and how their decisions will affect project impacts on issues associated with sustainability. This may then link individual goals to broader, longer-term effects on local contexts by linking deeper human values to deeper building impacts than are traditionally considered or available in project decision-

making processes. Without such 'meaningful-choice-space'—and techniques to facilitate meaningful choices—sustainability achievements are likely to be hindered because they lack both space and techniques for quality, conscious, meaningful and therefore enduring choices by individuals with respect to their situations and broader, long-term goals. In this sense, the "processes of decision-making directly affect the sustainability of their outcomes" (Adger and Jordan, 2009:6).

There are related studies (Holmes *et al*., 2011; Arvai *et al*., 2012; Martin, 2015) which suggest that communicating sustainability at both strategic and pragmatic levels in ways that recognise peoples' values can unlock a broader range of motivations and facilitate more informed decision-making affecting sustainability. Yet such unlocking and facilitating may be short-lived without meaningful support as projects develop. Among project stakeholders, clients are considered key project decision-makers (Gray and Hughes, 2007), and helping them to make sustainability decisions more meaningfully is thought to be critical to translating and embedding project sustainability (cf. Suri and Howard, 2006; Buhl *et al*., 2019). If clients and stakeholders do not do this intuitively, then key project professionals like architects (Brown, 2002; Ali *et al*., 2008) could assist by linking sustainability to their human values (vd. Poel, 2013; Martin, 2015)—individuals' representations of meaningfulness, worth, and import (Harder and Burford, 2018) as enduring ideals and goals in human behaviour (Roccas and Sagiv, 2017). One way that architects as designers commonly do this already is through an approach known more widely as framing (Paton and Dorst, 2011), e.g., while discussing and translating client and stakeholder requirements (Kamara *et al*., 2002; Kasali and Nersessian, 2015).

However, in this author's extensive experience as a (currently) practicing architect, key stakeholders on several projects who were initially committed to medium-to-high sustainability levels (e.g., BREEAM Excellent, CfSH Code 5-6) later changed

their minds. From these experiences, it was preliminarily hypothesised (see §3.8.1) that sustainability was not gaining sufficient traction with stakeholders to warrant retaining sustainability measures. It was later interpreted from literature that framing sustainability to appeal more at the individual level (Rodriguez-Melo and Mansouri, 2011) could make it more deeply meaningful to clients and decision-makers. If sustainability is thus considered to be worthwhile, meaningful, and important (i.e., valued), then plans for it are more likely to endure inevitable project changes (Ibbs *et al*., 2001). Both values (LeDantec and Do, 2009) and frames (Shealy *et al*., 2016) are key factors known to separately influence decision-making. Yet, very few studies have brought both values and frames together in the context of decision-making about sustainability (cf. Bond *et al*., 2010; Jerneck and Olsson, 2011), with none investigating the potential of values and frames as convergent pathways to both research and make better decisions about sustainability through project decision-making in practice. This thesis began to explore these factors, from which it would later emerge that understanding values and frames' interactions and effects could lead to better decisions through improvements to 'space for meaningful choice', further defined in §2.6.2. Having identified this clear need, the next steps consider how to problematise it and set out a research pathway to address it.

1.1.2 Addressing the problems and needs

To address the research problem, a clear pathway was mapped to understand each part of the problem, the parts' connections, and the overall whole, through extensive literature reviews. Interconnections from existing literature on these two foundational and overlapping areas suggested the following simplified chain of logic, outlined in Table 1.

Table 1 Chain of logic deduced from existing literature to understand and map a research pathway (see definitions §2)

Factors	Description
INITIAL CHAIN OF LOGIC	
Sustainability	Sustainability is a contested concept (Lankoski, 2016; Schroeder, 2018) requiring localisation and local interpretation before it can take form (Harder and Burford, 2018).
Decisions	Decisions form the foundation of architecture and construction as uniquely identifiable outcomes from a process involving a position, opinion, or judgment reached after consideration of the decision-problem & option(s) presented for deciding/choosing (Swami, 2013; Klotz *et al*., 2018).
Values	Values are relatively stable constructs representing individual worth, meaning, and import, expressed as ideals and/or goals; have relatively universal aspects; and are accessible and measurable (cf. Cheng and Fleischmann, 2010; Schwartz, 2012).
Frames	Frames communicate meaning, and reframing can embed new meaning in context (cf. Matthes and Kohring, 2008; Hertog and McLeod, 2001; Cornelissen and Werner, 2014).
Framing effects	Framing quantitatively equivalent decision-problems or choice options influences decisions counterintuitively to bias towards more immediate gains (Kahneman and Tversky, 2000).
Meaningful choices	Meaningful choices are likely to improve sustainability (Qian *et al*., 2012; Sen, 1999) because they would embed its' individual meaningfulness *to decision-makers* in their choices/decisions.
Choice-spaces	Choice-space provides a concept to organise decision-making and conceptualise the range of available options and acceptable solutions (Potschin and Haines-Young, 2008), involving decision-makers consciously considering what sustainability means to them, and the significance of how their decisions will affect their project's sustainability.
Interactions	**Description**
Frames and values	Both values and frames are known to have separate influences on decision-making, but their interactions and joint influences on decision-making are unclear in project sustainability.
Values and decisions	Values motivate behaviour and decisions (cf. Cheng & Fleischmann, 2010; Schwartz, 2012).
Decisions and frames	Decision-problems motivate decision-making according to how they are framed (Tversky and Kahneman, 1981; Shealy *et al*., 2016).
Values, frames, and decisions	The link between decision-maker's values and framing sustainability as a decision-problem is likely to be key to deciding more meaningfully about sustainability, but it remains unclear.
ADDITIONS TO CHAIN OF LOGIC BASED ON EMERGENT LITERATURE	
Values, frames, and meaningful-choices-as-decisions	Understanding the concepts and interrelationships of values and frames in meaningful-choices-as-decisions about sustainability could be crucial to unlocking possibilities in research and practice to address longer-term project sustainability, but they remain unclear.
Values-and-frames and meaningful choice-space	Within choice-spaces, more meaningful choices might be made by considering values-and-frames together as a composite concept and utilising their effects. These interactions might be a key locus and fulcrum for potential improvements, but they remain unclear.
Interactions between individuals	Taken together, these studies suggest that one-to-one interactions, especially between architects and clients in earlier stages, are where spaces for more meaningful choice might be found, but they too remain unclear.

Thus, the ways these factors interact in project decision-making contexts remains unclear. Identifying and maximising opportunities for more individually-meaningful choices concerning sustainability are likely to be a key pathway to overcoming human-induced bottlenecks. Knowing how sustainability improvements can be made (or missed) through values and frames interactions in decision-making therefore represents a significant knowledge gap. Therefore, any research moving towards closure of this gap represents a potentially valuable contribution to knowledge in research and practice toward improved human-ecological sustainability. To address these problems, a series of novel 'lenses' have been adopted to conceptualise, structure, and examine specific 'components' or 'variables' of the research problem, which were developed as they and their significance emerged along the research pathway, initially outlined in Table 2.

Table 2 Conceptual 'lenses' used to aid in examining the data, three of which emerged from the findings and helped in structuring the research

Conceptual lens	Explanatory scope	Study used
Composite Lens of Values-And-Frames (V+F)	Used to understand the fundamental relationship of Values-and-Frames as a tightly-linked composite concept in decision-making about sustainability.	Preliminary exploratory study
Lens of Values Influence Pathways Via Frames (V-INF-PATHS)	An emergent lens used to understand the fundamental relationship of Values-and-Frames interactions and effects in and on decision-making about sustainability over time as projects progress.	Structured Exploratory Study
Lens of Meaningful Choice (SpMCh & OpMCh)	An emergent lens used to understand the existing boundaries and potential space for improvement to decision-making about sustainability.	Structured Exploratory & Systematic Studies
Lens of Values-Framing (VFR)	An emergent lens used to understand the potential of values-based frames for creating choice-space, overcoming constraints, and making opportunities.	Structured Exploratory & Systematic Studies

However, it is crucial to note that understanding and clarifying the above components and their interrelationships, and the development of such a pathway, was by no means clear from the start of this research. All that was known at the start was that values might be a key to unlocking decision-making about sustainability. All else emerged and was discovered through the sequential, linked stages of the research from initial problematisation and literature search, to research design, and subsequent fieldwork and analysis. Because the research takes a grounded approach (§1.3.1), it converges disciplines, analytical levels, and

concepts; its interpretation, understanding, and assessment therefore invite a degree of open-mindedness to look beyond traditional disciplinary boundaries and criteria, to see potential success beyond individual experiences (Devos and Somerville, 2012).

1.1.3 Underpinning intentions and purpose of the research

In the context of challenges to human-ecological sustainability, the underpinning intention was therefore to contribute new knowledge useful for both theory and practice towards longer-term sustainability improvements in architectural decision-making through generating new understanding about underpinning interpersonal decision processes in projects. An ambitious and imprecise preliminary intention gave way to a focused purpose: to explore knowledge boundaries, then systematically identify key factors, relationships, and influences of values and frames in project decision-making processes.

This intention was problematised as a two-part main purpose: finding underpinning characteristics of sustainability decision-making that are potentially applicable across a wide range of actors, conditions, contexts, situations. This necessarily implied finding solutions in theory and practice. The first part—underpinning characteristics—pointed towards understanding interpersonal decision-making interactions. The second part—wide applicability—pointed towards understanding practical, interpersonal approaches to decision-making applicable to various conditions. Together their synthesis could potentially contribute to theoretical insights and practical solutions. Accordingly, the research also seeks to answer several hypothetical architects' questions, outlined in Table 3. For their answers, reference to §6 is suggested.

Table 3 Some hypothetical questions an architect might ask to develop their skills in improving meaningful choices about sustainability through values and frames

Subject	Question
Help	*What can I do to help my client make better (i.e., more individually-meaningful) decisions?*
Maximise	*How can I maximise my opportunities to secure and improve decisions about sustainability?*
Work	*How can I know whether my communication about sustainability to secure decisions is working or not?*
Effective	*What constitutes the effectiveness of my sustainability communication?*
Accurate	*How can I know the effects of what I am interpreting from and saying to clients and stakeholders?*
Examples	*What can I say that 'works', how and when? What should I not say?*
Prevent; Manage	*What can I do to prevent problems and manage change in ways that satisfy clients and stakeholders, and retain or enhance sustainability choice options and 'acceptance by choice through conscious decision'?*

These became guiding foci and together with preliminary research questions (Table 6) suggested existing literatures (Yin, 2014) to understand relevant academic conversations. From this, existing knowledge boundaries were established, gaps identified, and the research problematised with central questions, aims, and objectives towards finding and communicating plausible explanations. This research pathway employed a case-based grounded approach to the research design; its structure and rationale are introduced below and summarised in §3.

1.1.4 Thesis structure

This thesis is structured to communicate the research pathway, its' findings, interpretation, and conclusions, outlined in Table 4, with study organisation in Figure 3. It follows a seven-chapter format based on the logical steps taken along the pathway by phases, outlined in Table 5.

Table 4 Thesis structure and purposes

Number	Title	Purposes
Chapter 1	Introduction	To introduce research problem, purpose, context, foundations & scope
Chapter 2	Literature Review	To describe the research problem (Problem Statement), demonstrate the research need and relevance of the problem, establish the area and focus of the study, its variables and associations being explored, and a theoretical and conceptual framework on which the research is based.
Chapter 3	Research Design and Methods	To establish and explain the research methodology, research design and connection to research questions, summarise the research methods, and provide research quality and attainment criteria.
Chapter 4	Findings: Exploratory Studies	To communicate the main results of three interlinked Exploratory Studies in Phases 2-3, justify the findings, signpost supplementary material, then draw conclusions to the explorations through analytical reflection before transitioning to Systematic Studies.
Chapter 5	Findings: Systematic Studies	To communicate the main results of two Systematic Studies in Phase-4, justify the findings, signpost any supplementary material, and analytically reflect on the findings.
Chapter 6	Interpretation and Discussion	To interpret and integrate the main insights across and within groups and studies to form integrated novel insights towards original contributions to knowledge (outlined in §7). To connect or triangulate the wider implications of the main insights with existing knowledge and new perspectives relevant to the interpretation of this research.
Chapter 7	Conclusions	To reprise the original intentions and main insights. To summarise the contributions to knowledge, and evaluate and reflect on the research. To assess the research against the Chapter 3 quality and attainment criteria, and research limitations. To recommend future research, highlight any applications and recommendations for practice, and conclude the thesis with main messages for interested parties.

Table 5 Research phases mapped onto the thesis structure

Phase	Research Phase description	Chapter
Phase-0	Pre-research field observation (treated as preliminary hypothesis deducted from practice)	***Chapter 1-3***
Phase-1	Research Plan (RPA), Literature Review (in three parts, LR1-3), Research Design (RD), (with controlled and justified refinements later as key emergent factors suggested important concepts requiring further theoretical saturation).	***Chapter 1-2***
Phase-2	Pilot Study (ES1, including concept mapping MA1) Preliminary Exploratory Study (ES2, including process mapping MA2)	***Chapter 3***
Phase-3	Structured Exploratory Study (ES3, including sequence & refined process mapping MA3)	***Chapter 4***
Phase-4	Systematic Studies (SS1 and SS2, including process and sequence mapping with analytical refinements MA4)	***Chapter 5***
Phase-5	Cross-Group Synthesis (XGS), including interpretation and conclusion	***Chapter 6-7***

1.2 Central research questions and variables

1.2.1 Central exploratory research questions

Based on the research purpose, problems, and needs, a preliminary underpinning research question was first formed for research planning Phase-1, followed by two central research questions, outlined in Table 6, with associated exploratory aims and objectives, outlined below.

Table 6 Main exploratory research questions

Element	#	
PRELIMINARY UNDERPINNING RESEARCH QUESTION	URQ	Which human influences in decision-making impacting project sustainability are accessible in research and leverageable in practice? How? What is the role of human values?
CENTRAL RESEARCH QUESTIONS	CRQ1	What are the interactions and effects of values and frames together on decisions affecting sustainability from architects' perspectives?
	CRQ2	How are values and frames acting together in decision processes in ways that interested parties can use to improve and manage longer-term sustainability outcomes?

Through the research process, exploring answers to these questions this gave rise to key emergent factors permitted by the grounded, exploratory research design. Subsequent, focused questions during the individual studies were later developed based on emergent findings to guide consequent studies. These are discussed further in Chapter 3.

1.2.2 Aims and Objectives

The main aim of this research was to understand what foundational, fundamental, 'root-cause' human interactions and influences are accessible in research and leverageable in practice in ways that, because of their foundational nature, when understood and later utilised, might have broad impact on the sustainability of buildings through the practice of architectural design. Based on the research problem and needs identified above, to begin answering the initial underpinning

research question, the main exploratory aims and objectives, determined during the research design phase, are outlined in Table 7 (see also §3.2.4 for further detail).

Table 7 Main exploratory research aims and objectives (fully mapped in §3.2.4)

MAIN EXPLORATORY AIMS		MAIN EXPLORATORY OBJECTIVES
PA1	To understand the role of values as a key underpinning, interpersonal influence in framing and deciding about sustainability in decision-making processes.	To problematise and focus the Preliminary Underpinning Research Question from the preliminary Research Proposal into main research questions, aims, and objectives (herein) for Thesis Panel approval.
PA2	To make sense of the relationships between human values and problem-frames in problem-framing for 'sustainable design'* decision processes as unclear variables	To identify, discuss, and critically evaluate the literature which establishes the research problem, need, and scope.
		To define the key variables and their parameters to develop a research design.
		To determine methods to study the problem and describe the research methods in more detail.
EA1	To explore initial knowledge boundaries of values and problem-frames in the decision-making process affecting sustainability.	To unpack, describe, and potentially begin to explain the process of sustainability problem-framing in decision-making (through a values and frames lens) as a potentially key, fundamental influence in project sustainability outcomes.
EA2	To explore the relationships and interactions of values and problem-frames in decision-making processes affecting sustainability.	To identify, describe, and potentially begin to explain any values and problem-frames, their roles, interactions, influences, and effects on decisions in sustainable design* decision-making processes as they are experienced by a cohort of architectural designers through their engagement with key decision-making stakeholders therein.
EA3	To determine any influence of values on the formulation and framing of sustainability as a 'decision-problem' in decision-making processes as above.	To understand whose values are most influential and when, e.g., the most important phases of problem-framing processes in which values influences were found for further exploration.
EA4	To permit, describe, and evaluate any significant and relevant emergent factors that arise for further study.	To identify, record, and describe any emergent factors for further analysis and potential study towards theoretical saturation.
		To evaluate the analysis design and methods and make recommendations for refinements to the analysis design methods.
		To consider any variations and plausible explanations within and between cases, and across groups.
		To understand how the findings might be useful for architectural practice.
		To reflect on the findings and methods from the exploratory data and determine any modifications necessary in a controlled and justifiable evolution of the focus or methods towards theoretical saturation.

** See §3.2.4 Table 5 for explanation of shift from "sustainable design' decision processes' to 'project decision-making process affecting sustainability'*

Whilst there may be other variables and processes involved, like attitudes and beliefs, the research initially aimed to understand the role of values as a key

underpinning, interpersonal influence in framing and deciding about sustainability in decision-making processes. However, existing literature showed that, separately, both values and frames play independently significant roles in decision-making, but their interactions in the context of project decision-making processes and, within them, sustainability decision-making remained unclear and under-researched (EA1). This subsequently focused the research to explore relationships between values and frames in architect-stakeholder decision-making processes affecting sustainability (EA2-3). Several significant factors emerged from the exploratory studies as permitted by the grounded exploratory research design (EA4). Key emergent factors and their treatment are outlined as they arose at the conclusion of each part and phase.

The objective was first to problematise the need and design a research pathway to explore the actors, variables, their interrelations, and effects; then compare results between cases and organisations; and finally develop some plausible explanations for their relations, whilst considering emergent factors for further study. Systematic studies would then examine a larger selection of cases to confirm, extend, or refute the exploratory findings, and consider how they be reframed to be useful for practice. These points are further developed in the Research Design, §3.

1.2.3 Independent and dependent variables

The links between values and framing sustainability as a 'decision-problem' are newly explored and then examined more systematically in the context of project decision processes with sustainability as both dependent variable and outcome. As will be further discussed in Chapter 3, sustainability is considered as dependent on 1) decision-making and its processes, 2) the way it is framed in decision contexts, and 3) the values which input and influence problem-framing and decision-making. Values and frames are considered independent of sustainability as both state and goal. It is conceivable that speakers' frames are dependent on their

values, and plausible that values and frames are interdependent; these are investigated further in this research. Decisions are considered contingent and therefore dependent upon values and frames. Thus, these relationships informed the research design to focus on the interactions and effects of values and frames on decisions. Values, frames, and decisions of individuals and groups (and, later, decision-makers' meaningful choices) were initially considered to operate independently of sustainability as a state, but their relationships are also investigated further in this research. Hence, sustainability is conceivable as dependent on the values, frames, and decisions of those people. Sustainability is, by extension, conceivably dependent on the interactions and relationships of the other three variables.

1.2.4 Associations being explored

The research questions and summary Table 6-Table 7 indicate that the associations explored are the interactions and effects of values and frames, first as values on frames, then on each other, and on decisions affecting sustainability, and later on spaces and opportunities for meaningful choice as key emergent factors during the research development. The intention was to understand how these interactions affect project sustainability and where improvements may be gained through the interpersonal interactions leading to decisions, and later, where any opportunities for meaningful choice exist and space made, through adopting a values and frames lens.

If project sustainability is dependent on values, frames, and decisions, then the relation of their interconnections and ordering—i.e., the association between these variables—is required to understand their effects. The association was subsequently refined and focused to explore then identify and explain the influences of values and frames on decision-making-as-process, decisions affecting sustainability as outcomes, and later the role and space for meaningful choice.

1.3 Outline of the research design and pathway

1.3.1 Research design introduction

The research problems and needs identified above are developed through the Literature Review, §2. They then inform and guide the development of an appropriate research design, data generation, and analysis methods, introduced below and explained in §3.

Within the field of architectural design and its management, this research was undertaken in a nascent area of values and frames in architectural decision-making processes affecting sustainability (Figure 1). For this research, values-and-frames were chosen as a tightly linked, composite concept—a lens to examine the decision-making process. One would not be searched for without the other; the co-evolution of both would need to be followed along participant's unfolding discussions to understand their interactions and effects in the decision-making process. The core aim of this research was twofold: to understand values-and-frames influences and effects in decision-making, to then identify opportunities for more meaningful choices, both concerning longer-term impacts associated with sustainability. Using a joint lens of values-and-frames, decision-making discussions were investigated in key interactions from the perspective of one central actor: the architect. Because this involved the analysis of complex and non-uniform discussions unfolding over time, it was necessary to focus on specific examples, i.e., as cases, and to prepare for those by understanding each context. The research therefore adopts a case-based approach (Yin, 2014) to allow the depth of complex but contextualised cases and resulting 'thick' descriptions (Ryle, 1987) needed to produce the richness of findings necessary to reveal patterns, derived in a grounded approach (Charmaz, 2006; 2013). As a grounded qualitative study, a pragmatic constructionist epistemological approach (see Figure 4) was commensurate with exploring individuals' perspectives on their lived experiences

of individual and interpersonal interactions. Accordingly, the research was designed to accommodate controlled and justifiable evolution (as §3).

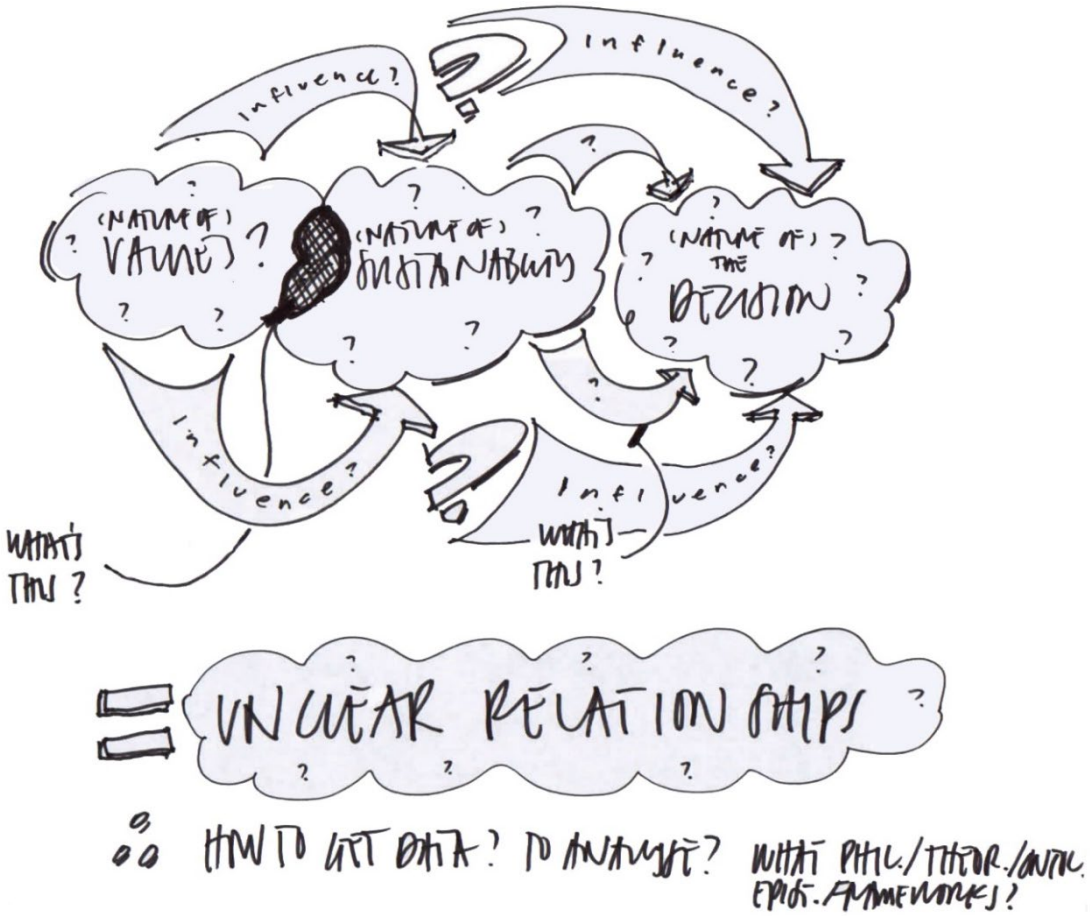


Figure 1 Initially unclear relationships in a nascent area, depicting preliminary knowledge gap

1.3.2 Research structure and phasing

This qualitative case study research was structured (see Figure 2-Figure 3) to account for a preliminary phase recognising pre-research field observations made through extensive professional practice (Phase-0), formally transitioning into literature reviews and research design (Phase-1). The exploratory nature of the first, preliminary primary data studies would establish a broad knowledge landscape (Phase-2), transitioning to more structured exploratory studies to pinpoint key relationships, orderings, and effects (Phase-3) for subsequent systematic study (Phase-4). A cross-group synthesis (XGS) was conducted to

integrate the core findings and contributions (Phase-5) for later translation into practice guidelines.

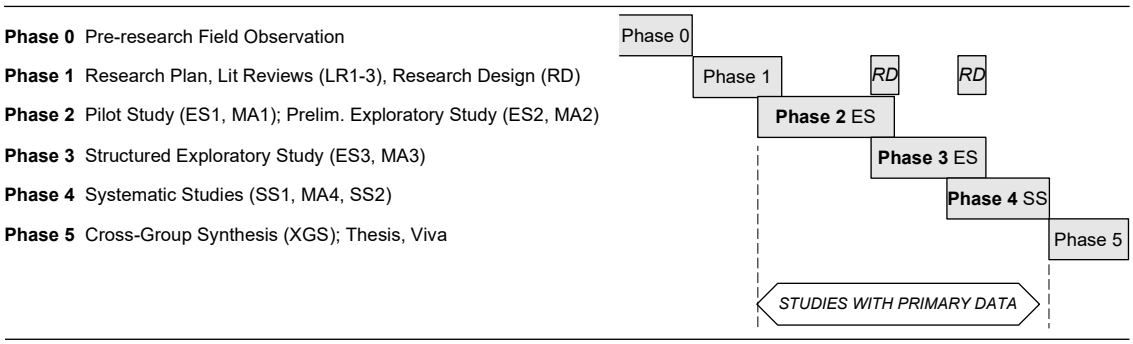


Figure 2 Research phasing and simplified timeline (timeline bars are approximate and not to scale)

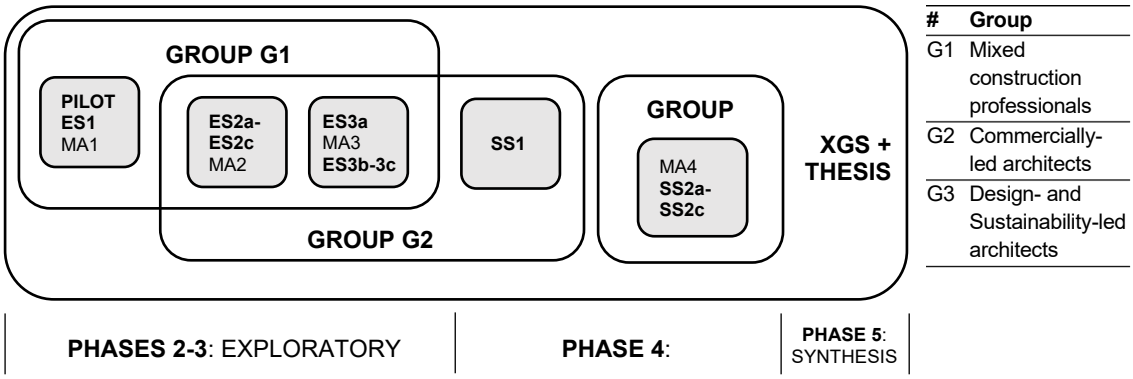


Figure 3 Study organisation, participant groups, and phases

The exploratory nature of this research lent itself to employing a case-based grounded approach, recognising and accounting for emergent factors (e.g., see §3.4.5). Accordingly, the first primary data studies (Phase-2) were conducted with two participant groups (G1-G2) (Figure 3), to pilot the data generation and analysis methods (in Exploratory Study ES1) and then explore data and develop the methods (ES2) for more structured exploration (ES3) then systematic study (SS1-2) of the main aspects of the research problem and its key emergent factors. The first systematic study would then be extended with a third group (G3) to understand a broader range of interactions and effects. Participant Group-G1 comprised a mixture of experienced building design and construction professionals for a broad range of responses. G1 studies helped refine and focus

G2 on only one type of experienced architectural professionals, commercially-orientated, to limit false-positives and focus on key factors for extension with G3 as experienced design- and sustainability-oriented architectural professionals. For the research outputs, please see Appendix-7.

1.3.3 Data generation methods

To study the processes, content, influences, and effects of participants' experiences with values in framing sustainability as a decision-problem, literature was examined to determine which methods were consistent with similar research to advance knowledge in the discipline (APA, 2019). The primary data generation methods employed were semi-structured interviews, focus groups (values workshops), and surveys, with text analyses of secondary data. These methods were chosen as validated and consistent with research of similar nature in this discipline with this research methodology and focus on practitioners' experiences in deciding about sustainability in the context of architectural practice, as explained in §3.2-3.4.

As will be described in Chapter 3, through literature review the key underpinning variables were identified and access points in human individual and interpersonal processes were pinpointed and summarised (§2.5.2). Operational definitions and principal categories deduced for data coding also were identified (§1.4.1). Interviews were initially designed and have provided a wide range of data on five broad areas of individual's experience. These interviews and topics were narrowed in Phase-3, as further discussed Chapter 3. Two additional methods formed a pragmatic constructionist toolbox (see §3 for detail). The first was a focus group 'workshop' method of eliciting, capturing, and recording the values of individuals operating together as a team or organisation, called WeValue InSitu toolkit (e.g., Harder and Burford, 2018). Based on Pilot Study findings, a second method was added to elicit the values of key informants as individuals for internal

triangulation using the Schwartz Portrait Values Questionnaire (PVQ-40) (Cieciuch and Schwartz, 2012). Together these data generation methods are shown diagrammatically in Figure 4 below, layered on top of the philosophical foundation, further discussed in §3, with additional detail in Appendices 3.2-3.3.

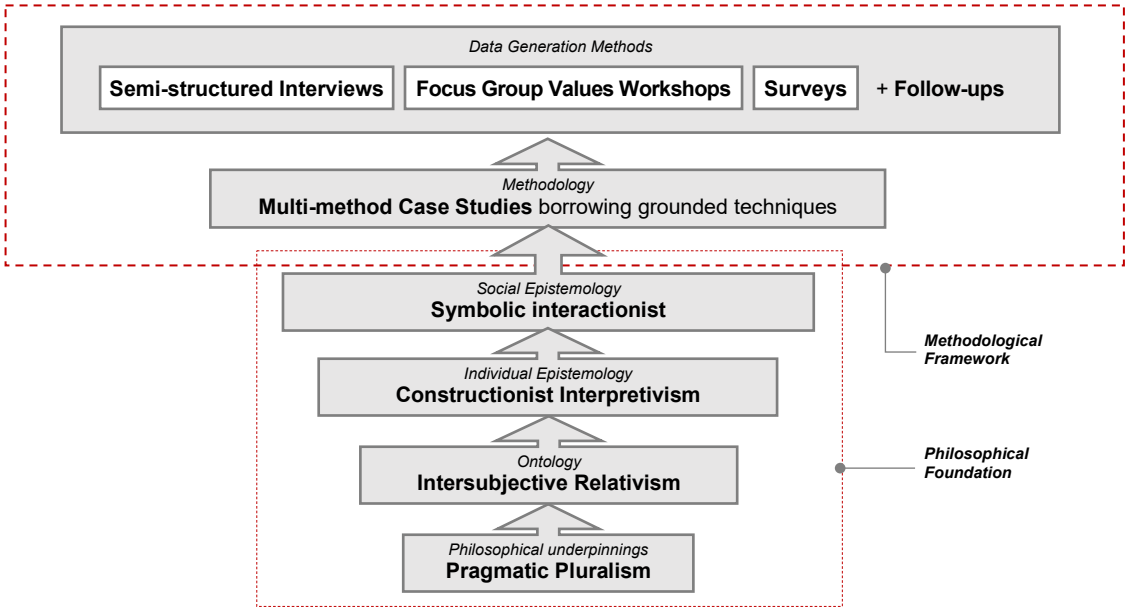


Figure 4 Research Design Pyramid, from underpinnings to data generation methods (Format: Crotty, 1998)

1.3.4 Data analysis methods

Thematic analysis (TA) (Braun and Clarke, 2006; 2013) was first used with values and frames as constructs generated deductively through explicit research objectives. TA was then used inductively to analyse for any inexplicit experiences, processes, influences, etc. These were conceptually mapped thematically (by concept, category, theme) to draw out any potential insights gained through visually representing concepts and their relations. Frames and values were coded and thematised first to provide indicators or markers of the framing process. Thematic experience pattern analysis was used to more accurately identify practitioner's framing processes as a pattern of experience (*ibid*., 2006; Aronson, 1994), then conceptually mapped using both grounded (Charmaz, 2006) and thematic mapping techniques (*ibid*., 2006; 2013). The Business Process Modelling

Notation (BPMN) was considered for use as a field-recognised method (Rekola *et al*., 2012) for graphically mapping project processes to visually communicate or describe the operations, clearly demonstrate the interactions, and facilitate replication and verification. However, it emerged that first sketching out concepts and relationships using grounded thematic mapping techniques (*ibid*., 2006, 2013; 2006) facilitated a better understanding of the framing process and where important interactions occurred temporally, to then analytically pinpoint and map values influences in the most important interactions. The most important framing interactions found in multiple Units-of-Analysis were examined by analysing the framing process with a values lens using Relational Analysis and mapping (Carley, 1993) alongside grounded thematic and concept mapping (Kinchin *et al*., 2010) techniques developed in the exploratory phase. These procedures are described in §3 and further detailed in Appendix-3.

1.4 Research foundations and scope

1.4.1 Definitions of key terms

'*Problem-solving'* is a systematic process of defining a problem (a difficult issue, problem, or challenge) and creating a solution (e.g. Bardwell, 1991; Newell and Simon, 1972), whereas '*decision-making'* is selecting a course of action among available and potentially competing alternatives (Swami, 2013; Brest and Krieger, 2010). '*Design thinking'* has been described as a designation of, or approach to, the cognitive problem-solving processes (both emotional and thinking processes) involved in designing, the thinking in design, and about design problems (Cross, 2001; 2011), which has been adapted to numerous problem-solving contexts (Dorst, 2011). Several prominent and related studies have suggested that the iterative process of identifying and communicating the 'problem' to be solved; *'problem-definition'* and *'problem-framing'* are potentially the most important

components of problem-solving (Newell and Simon, 1972; Bardwell, 1991; Runco, 1994; Goldschmidt *et al*., 1996).

'Problem-frames' are scope-defining boundaries of relevant issues to include or omit from problem-solving (Mullenbach, 2007), decision-making, or design thinking, as adopted by an individual, forming a particular perspective or point of view about the problem towards a solution. *'Problem-framing'* is a process of forming and communicating scope-defining boundaries (Bardwell, 1991; Cornelissen and Werner, 2014). In this process, individuals, drawing on their past experiences, abilities, and individual characteristics, e.g., values, beliefs, and adopted standards/norms, and the situational drivers and characteristics such as motivations, attitudes, and opportunity, may begin to form a view, perspective, or *'frame'* of the decision-problem they ultimately bring to and decide in the decision-making process (*ibid*., 2014).

'Human values' signify to people what is most important, meaningful, and worthwhile in their lives as ideals and goals, and are fundamental, underlying motivations and drivers of behaviour including decision-making (Schwartz, 2009; Blackmore *et al*., 2013). Values can be understood as also providing context for decision-making in which a decision-problem frame is constructed: "[t]he frame in which one views a problem or decision is a function of the decision context, which is determined both by the values, interests, or objectives at stake and by the authority of the decision-maker" (Brest and Krieger, 2010:33). However, values cannot be revealed in a way for others to recognise when devoid of setting and situatedness (Harder and Burford, 2018). Values can manifest through frames: "[f]rames are both mental structures that order our ideas, and communicative tools that evoke these structures and shape our perceptions and interpretations over time" (Holmes *et al*., 2011:36). This understanding led to adopting frames as a lens to contextually define, communicate, and work with values in the context of

decision-making affecting sustainability. These foundational concepts are further elaborated in §2 (see also Appendix-1 Glossary).

1.4.2 Assumptions

An assumption made prior to fieldwork was that participants might potentially say what they think researchers might want to hear. This was managed with the interview methods through open-ended questioning by following not only relevant, interesting, and/or unclear threads emerging during interviews, but also providing space for necessary clarifications. If similar patterns were found across numerous units-of-analysis within cases, across cases, participants, and groups, this assumption would be plausible and useful to help prevent low-quality data.

Assumptions about architect-stakeholder relationships were required to enter the field and account for variations in their interactions. Research suggests that the quality and characteristics of architect-stakeholder interactions may be affected by participants' personalities, frequently called individual differences (as Levin *et al*., 2002; Sagiv *et al*., 2003), and specifically individual values and communication 'styles' or approaches involved with framing. It was subsequently assumed that architect-stakeholder and architect-client relationships were potentially different in nature, and that participants typically avoided aggravating their clients because their livelihoods were assumed to be tied to clients' fee payments. This may induce a strong or unnatural bias towards achieving client satisfaction at the expense of other goals; such effects are considered in this research.

One assumption was that stakeholders and clients would make decisions based, at least in good part, on the information and options communicated to them by the architects, and that their decisions were somehow bound up with those communications and individual differences studied here as values and frames, and that it may be possible to disaggregate these factors to determine more precise relationships, influences, and effects. As a core aim, this research examined these

factors. Whilst this assumption might not be true, patterns would be identified within and between stakeholders which confirm, extend, or refute this and other assumptions.

Initially it was assumed that the principles of sustainability might be preferred over their alternatives: respecting planetary limits preferable to transgression; intergenerational equity preferable to inequity; responsible commerce to irresponsible; and sustainability to unsustainability. But because of the grounded, inductive approach, findings emerged which suggested otherwise, and the assumption jettisoned as faulty because it was derived more from researcher bias than necessity (see Table 40 for strategies and controls).

1.4.3 Scope and Delimitations

The research concerns a nascent area comprised of overlapping domains. Therefore, defining the scope required strict bracketing out, or 'freezing', of any broader variables or participants to avoid 'mission-creep'. Accordingly, the boundaries defined through the above problem-need, research questions, aims and objectives naturally delimited the scope.

The study concerned decision-making or decision-influencing stakeholders in interpersonal interactions with the participants. This naturally froze potential mission-creep into broader domains including designing, policy, advocacy, planning or building regulations *per se*. It also constrained the study to parties involved in a specific type of project decision-making process: interpersonal discussions leading to a decision concerning or affecting project sustainability. Aspects of those broader domains may have been involved in decision-making, but they were not the focus of this research. The study concerned decision-making processes, but not the cognitive act of choice selection or decision-making, nor the neurological aspects. Similarly, the thought process and psychology of design, and

factors associated with design perception, e.g., aesthetics, taste, preferences, culture, are also not within the scope. This positively constrained the study to focus on interactions and interplay of key variables, but could happen in processes that were temporally extended and subject to change. The research looked not at the processes and influences of change *per se*, but only at the decision-making process and the variables, interactions, and effects as defined herein. However, the study was later focused on sequences in individual decision-making 'scenarios' serially-linked over time which involved change.

The study also focused on key stakeholders in decision-making processes, but did not address stakeholder or public engagement as a domain of study *per se*. Formulating and framing sustainability as a decision-problem was considered to involve stakeholders and may be considered a form of stakeholder engagement. In this way, stakeholder engagement may be considered a process of informing stakeholders and gaining feedback which involve project-based values and framing/reframing frames then input into key decision-maker's deliberations in the process of decision-making. The study focused on interactions of values-and-frames in the process of key decision-maker's decision-making concerning or impacting sustainability, not the role of values-and-frames in stakeholder engagement—a subtle but qualitatively relevant analytical distinction. More specific individual variables such as cognition, perception, memory, education, skill, etc. were also de-scoped and excluded from study boundaries to avoid unnecessary confusion and mission-creep.

Regarding the specific study variables, because human values can manifest at multiple levels of analysis, including individual, group, social, or national, only individual human values were studied because of their likely immediate and tangible roles in decision-making processes. The study focused on only human values of participants and those that individual decision-makers expressed to architects because these were considered most likely to impact directly on

behaviours involved in framing and decision-making. The source of an individual's values was also bracketed out, with only human values attributable to decision-makers in this context admitted. But because values are identified in literature as foundational individual and interpersonal variables potentially motivating decision-making behaviours, this also delimited including other interpersonal variables such as attitudes, beliefs, norms, motivations, abilities, drivers and barriers as such without specific manifestation as human values according to the operational definition provided. Thus, any other behaviours were stringently bracketed out of the equation to avoid mission-creep.

Because frames can also be studied at multiple levels of analysis, they have been limited to an accessible level as relevant to studies of interpersonal decision-making processes: communication frames, where problem- and decision-frames are considered specific forms. In this context, 'deeper' levels of analysis, such as cognitive frames, are considered inaccessible for this research, thus descoped. Whereas higher-level frames were only considered relevant if they manifest through interpersonal discussions, such as problem or decision frames. Thus, in the context of decision-making, a problem- or decision-frame could translate and manifest other frame-types including news, team-level, organisational, institutional, or societal-level frames, whereby analyses could identify their relevance and impact on decisions/choices. In this way, decision-making processes were ultimately disaggregated to include only key influential components: diverse values-types manifesting as individual human values and communication frames potentially translating and manifesting other frame-types within project decision-making processes.

1.5 Chapter summary

In this chapter, the research context and problem were introduced to lend insights to a novel theoretical framework (Figure 10). Micro-scale individual and

interpersonal processes and their influences may be linked to project outcomes in meso-scale urban and regenerative development projects. Conceptual links were made between individual and interpersonal factors influencing decision-making processes and outcomes, pinpointing potentially the core roles of values and frames in framing for decision-making with sustainability identified as both dependent variable and outcome. An initial conceptual framework highlighted the human cognitive foundations of decision-making behaviour and potential interconnections between human values and problem-framing for empirical examination.

The overarching research aim is to find a way to increase the embedding of sustainability into project outcomes. This may be possible through investigating the interactions and effects of values and frames in decision-making discussions, findings from which, it later emerged, might be helpful to facilitate better, more meaningful decisions/choices. The main objective is thus to analyse a variety of architect-stakeholder discussions in terms of their values and frames, and to consider how those relate to any final sustainability decisions/choices. From that, the research then proceeds to the later, higher objective of specifically how to improve the meaningfulness to decision-makers of sustainability and its conscious choice. Accordingly, the literature review giving form and context to these key concepts is discussed next in Chapter 2, followed by Chapter 3 research design.

Chapter 2 Literature review

2.1 Chapter introduction: Problem statement and need

The purpose of this chapter is to describe the research problem, demonstrate the research need and relevance of the problem, establish the area and focus of the study, its variables and associations being explored, and outline theoretical and conceptual frameworks on which the research is based (with keywords italicised).

2.1.1 General research problem

In the UK, construction of new buildings produces 45% of total UK CO_2 emissions (Innovate-UK, 2020) and is the largest user of newly-extracted raw materials each year (Giesekam *et al*., 2014), with the built environment contributing 40% of all air pollution (Spanos *et al*., 2007). Housing alone contributes to 27% of carbon emissions (Menconi *et al*., 2018), industry 18%, and a further 11% from transportation (DBEIS, 2018). Once built, energy consumption from heating and small power contributes to fossil fuel consumption and subsequent atmospheric GHG emissions (DBIS, 2010). GHG emissions are established contributors of powerful, unpredictable global environmental change (Ripple *et al*., 2019). Accordingly, the UK has set a legally-binding target of 80% carbon emissions reduction by 2050 from 2009 baseline (H.M.Government, 2008), which by 2013 had "failed to produce political certainty and investor confidence" (Lockwood, 2013) and such shortcomings continue to endanger communities (Sparrow, 2019). To address this problem, existing research has identified ongoing developments in planning policy (Feitelson, 2017), building regulations (Pan and Garmston, 2012), professional education (Bresnen, 2013), project management (Lambrechts *et al*., 2019), and various technologies (Tam and Le, 2019) in UK architecture, engineering, and construction (AEC) practice concerning sustainability. Despite this important work, crucial elements are missing from not only sustainability debates, but also architectural practice to improve sustainable outcomes from building projects.

The broad problem this research addresses thus stems from the need for AEC projects to improve sustainability levels beyond minimum statutory requirements (Williams and Dair, 2007; Häkkinen and Belloni, 2011; O'Neill and Gibbs, 2018; Henderson *et al*., 2016). Initial willingness to embrace sustainability (Goebel *et al*., 2018) suggests that although potentially confounding factors such as cost, complexity, and conflict may be partly responsible, they are unlikely be solely responsible for minimum baseline outcomes in AEC projects (cf. Klotz *et al*., 2018; Shealy *et al*., 2019). It is likely that discussions about longer-term 'futures'—which Harty *et al*. (2007) argue are critical to sustainability improvements—are squeezed out of immediate contexts in projects because of what Schweber (2012) suggest are likely due to combination of technical and non-technical, human influences. Thus, by capitalising on current research addressing human factors in decision-making *and* the availability of established technical options and strategies to exceed minimums (cf. BREEAM, Home Quality Mark, PassivHaus, etc.), this research focuses on the problem of understanding any existing or potential opportunities for decision-making improvements, and the decision-making discussions therein, because they may be crucial to unlocking possibilities in research and practice to address longer-term project impacts typically associated with sustainability.

One very promising route to improvements was considered by converging two foundational and overlapping research pathways in behavioural decision-making research applicable to AEC project planning and design. This new route converges the potential of human values and problem-frames as underpinning influences accessible and potentially leverageable in decision-making processes, characterised in research as well-known cognitive limitations of framing effects in decision-making (Shealy *et al*., 2016) and idiosyncrasies of human values as drivers of decision-making (Cheng and Fleischmann, 2010). To incorporate multiple decision-makers' inputs, the concept of 'Sustainability Choice-space' can

provide room to explore acceptable ranges of outcomes to stakeholders (Potschin and Haines-Young, 2008) which may then account for such limitations. However, no previous research has examined both values and frames in architectural design decision-making 'spaces' concerning or affecting sustainability. Furthermore, the question of how, together, values-and-frames affect such spaces, and therein the uptake, progress, and delivery of sustainability initiatives/measures, remains underexamined in research on sustainability decision-making in design practice and its management.

2.1.2 Specific research problem

One way to address this gap is through a convergent approach (Klotz ea., 2018) to the research problem and its study. Sustainability is a widely-embraced goal, but improvement opportunities are missed in AEC. As will be detailed below, various literatures report that concrete conceptualisation of sustainability requires local interpretation and meaning-making; that linking 'local' values to sustainability might provide enhanced meaning to it; that the use of frames might assist in contextualisation and individualisation of sustainability options to stakeholders and clients; and that framing is already a common general approach for architects; but no evidence exists of their combined use in practice. Together these points strongly suggest that, in principle, great strides may be possible if frames were used to explicitly establish a local concept of sustainability to individuals in a project, and its level of desirability, via human values to facilitate more and better decisions favouring sustainability. As an interdisciplinary problem (Schoolman *et al*., 2012), researching this would ultimately require a progressive development, aligned with grounded approaches. This would involve first exploring the fundamentals of values and of frames influences in decision-making about sustainability, to then explore key emergent factors, and later systematically establish the means and techniques for improvements through understanding the influences of values-and-frames as a composite concept.

Although there are numerous points for decisions to be made throughout projects, it will be shown that most of these are severely constrained by not only policy and regulation, but also individual differences, cognitive limitations, and idiosyncrasies in decision-making. Such constraints therefore may delimit the space, or opportunity, to bring in personal, plural, or more socially-beneficial perspectives. In such space, stakeholders would have real advantage and authority to consider long-term, local and contextualised choices in more individually-meaningful ways. The literature introduced above and detailed below can be interpreted as evidence of a subtle but crippling bottleneck in achieving greater project sustainability: the lack of more and better-quality spaces throughout project decision processes for more meaningful, individual, contextualised considerations of sustainability and long-term futures as a novel improvement pathway.

Thus, this work involved both developing and applying a method to first explore architect's discussions with decision-making stakeholders, then focusing on architect-client discussions through a composite lens of values-and-frames as potential loci for improvements. The method and lens were then used to look for insights into practices involving decision-making 'spaces' and any potential improvements. Such an approach involved examining separately then converging values-and-frames to first understand how they interact or evolve to inform or influence each other, and then any decisions themselves. This initial process needed to determine how human values are 'operationalised' through interpersonal practices of framing sustainability in decision-making processes. More specifically, understanding the influences of values on the formulation and framing of sustainability in decision-making can provide novel insights into the complex interplay between the studied individual differences, interpersonal interactions, and their influences in decision processes affecting sustainability. Only with knowledge of these basic parameters, could the 'spaces' within which project decisions were made over time, and any opportunities for improvement

(i.e., to create space), then be understood. The research then examined where any space for meaningful choice already occurs, however rudimentary, and where and how better quality and more such space can be provided by practitioners for improvements to individually-meaningful choices about sustainability. This could provide a direct, more holistic, and fundamental approach to addressing these gaps, which together could make step-wise contributions to scholarship on sustainability decision-making in architectural projects.

Following from Chapter 1, the research is not about sustainable design *per se*. This review will focus on finite, underpinning, human decision variables, constraints, and opportunities from the broader perspective of project sustainability and impacts. Review design and methods are introduced first, alongside review inclusion criteria (§2.2). Existing research is reviewed first on the immediate and larger contexts of sustainability and sustainable development for AEC practice. Core factors about communicating and deciding about sustainability are then reviewed (§2.3). Literature on values and their connections to frames and decisions then concludes the literature search conducted for the first exploratory studies (§2.4). Based on key emergent factors from both exploratory and systematic studies, the review then transitions into considerations of room for improvement as the core conceptualisation of the key emergent factors, and the convergence of values-and-frames in the study of space for meaningful choice about sustainability (§2.3.5). These factors are then integrated into a framework (§2.6). Thus, outcomes from this review informed the larger research project in phases.

2.2 Review design and methods

2.2.1 Review methodology

The review employed a 'traditional narrative' review method (Cronin, 2008) and borrows grounded (Charmaz, 2006) thematic techniques (Braun and Clarke, 2006)

(see §2.2.2), using mixed sampling method as described below. It was guided by a specific review question, where defining an appropriate epistemology (pragmatic constructionism with interpretive symbolic interactionism (see §3)) helped to establish suitable review methods to ensure knowledge claims were logically and epistemologically consistent. This review sought to identify knowledge gaps concerning underpinning, foundational, human determinants in relevant literatures applicable to decision-making processes for built environment sustainability. Review findings were employed to refine initial research questions and aims, to guide new research and indicate where to begin generating data to answer those questions. The review method is first introduced, followed by review inclusion-exclusion criteria.

2.2.2 Narrative review method

A narrative literature review method was adopted with grounded thematic techniques because it is well-established for identifying knowledge gaps and integrating review findings for further research (Ferrari, 2015). Cronin's (2008) base method is combined with grounded, thematic-type of narrative literature review (Barnett-Page and Thomas, 2009; Thomas and Harden, 2008) to understand and evaluate decision-making research, and its foundational human-centred characteristics. A grounded, inductive-deductive loop (Corbin and Strauss, 1990; Strauss and Corbin, 1998) (Figure 5) helps link these findings into the main study as the last portion of the first of three main inductive-deductive loops (Table 36) towards abductively deriving the most plausible explanation (*ibid*., 1990; 1998). A thematic lens (Braun and Clarke,

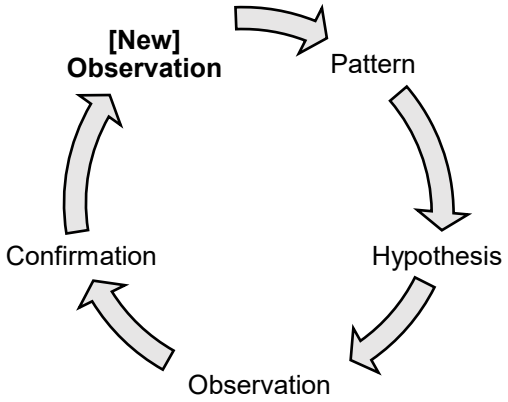


Figure 5 Basic inductive-deductive loop

2006) is applied to understand aspects of human influences affecting sustainability, which provides an additional tool to help establish relevance and contextualise the results.

The purpose of this review method is to explore the relevance of concepts to the research problem and compile a picture of current knowledge by presenting and evaluating the potential of a human influences approach to project sustainability improvements. Therefore, the focus is not on comprehensiveness of systematic reviews in terms of depth, but in terms of breadth of coverage and relevance (Cronin *et al.*, 2008). An outline of the procedures employed is shown in Table 8.

Table 8 Grounded thematic narrative review procedures (adapted from Cronin *et al*., 2008)

STEP 1	**SEARCH, SELECT/SAMPLE, FAMILIARISE and ITERATE**
1.1	Search, Record keywords, and employ the search/sampling methods according to the method outlined below in Section 0, with review inclusion-exclusion criteria in Table 9.
1.2	Familiarise and Sense-make, focusing first on the literature's title, abstract, and conclusion.
1.3	Assess relevance and quality.
1.4	Organise (roughly group, code, and thematise; categorise). Iterate.
STEP 2	**QUESTION, ASSESS, RECORD/CAPTURE and ITERATE**
2.1	Review content using a *preview, question, read, record* (PQRR) method
2.2	Assess five factors using TAPFOR (title, author, purpose, findings, outcomes, reflections).
2.3	Group, code, and thematise; categorise.
2.4	Record key data in indexing systems (literature matrix (Appendix 2.2) and EndNote reference
2.5	manager).
	Capture and organise key data nuggets according to groups, categories, and themes. Iterate.
STEP 3	**ANALYSE: EVALUATE, APPRAISE/REFLECT, CAPTURE, REVIEW/REVISE LOGIC MODEL**
3.1	Analyse fundamental or key findings (per five factors below #3.2), capture, evaluate for human influences; Constant comparison with initial Record/Capture.
3.2	Appraise using reflective summaries including key thoughts, comments, strengths, limitations, relevance, potential gaps; (Constant) Compare with Logic Model.
3.3	Review/Revise Logic Model based on Constant Comparison as necessary to account for review findings
STEP 4	**ITERATE / REPEAT**
4.1	Iterate/Repeat steps 1-3 until theoretical saturation is achieved and knowledge gap is identified.

2.2.3 Search and sampling method

A mixed, purposive sampling strategy was adopted per Patton (2002), Suri (2011), and Wohlin (2014) as follows. Three methods are consistent with the review method, logic, epistemology, and focus; in order of their deployment: 1) constrained (Lecy and Beatty, 2012) snowball sampling (Wohlin, 2014) (also known as 'pearl-growing' (Barnett-Page and Thomas, 2009)); 2) purposive, theoretical sampling and 3) emergent sampling (Suri, 2011). This was used to construct a start-set, then narrowed into a focused-set, then refined with backward- and forward-snowballing as Wohlin (2014), then purposive, theoretical sampling as advocated by Patton (2002) and advanced in detail by Suri (2011). During the review as new concepts were found, theoretical sampling was combined with emergent sampling (Suri, 2011) during writing and development. In this way, the review directly reflects the concepts and structures found in the literature, thereby ensuring concepts were sufficiently saturated and knowledge gaps were made evident. A detailed exposition is provided in Appendix-2. The main inclusion-exclusion criteria comprised six facets (guided by Arksey and O'Malley (2005) and Anderson *et al*. (2011)), outlined in Table 9.

Table 9 Literature review inclusion-exclusion criteria

#	Criteria	
1	Concern, or be applicable to, built environment projects (e.g., permit interdisciplinary cross-fertilisation);	
2	Involve professionals and adults (e.g., not studies including or involving schoolchildren)	
3	Involve at least one uniquely-identifiable decision-maker, but also apply to one or more or stakeholders (e.g., professional plus client or statutory authorities, etc.);	
4	Provide insight into the process and acts of decision-making via empirically derived theory;	
5	Handle complexity in terms of multiple decision inputs and multiple decision criteria (e.g., multi-source multi-type human and technical 'information' and multiple requirements/needs);	
6	Handle context-specific factors regarding:	a) Individual differences in decisionmakers, such as capability and personality, and
		b) The decision situation/scenario regarding uncertainty, complexity, and temporal extension

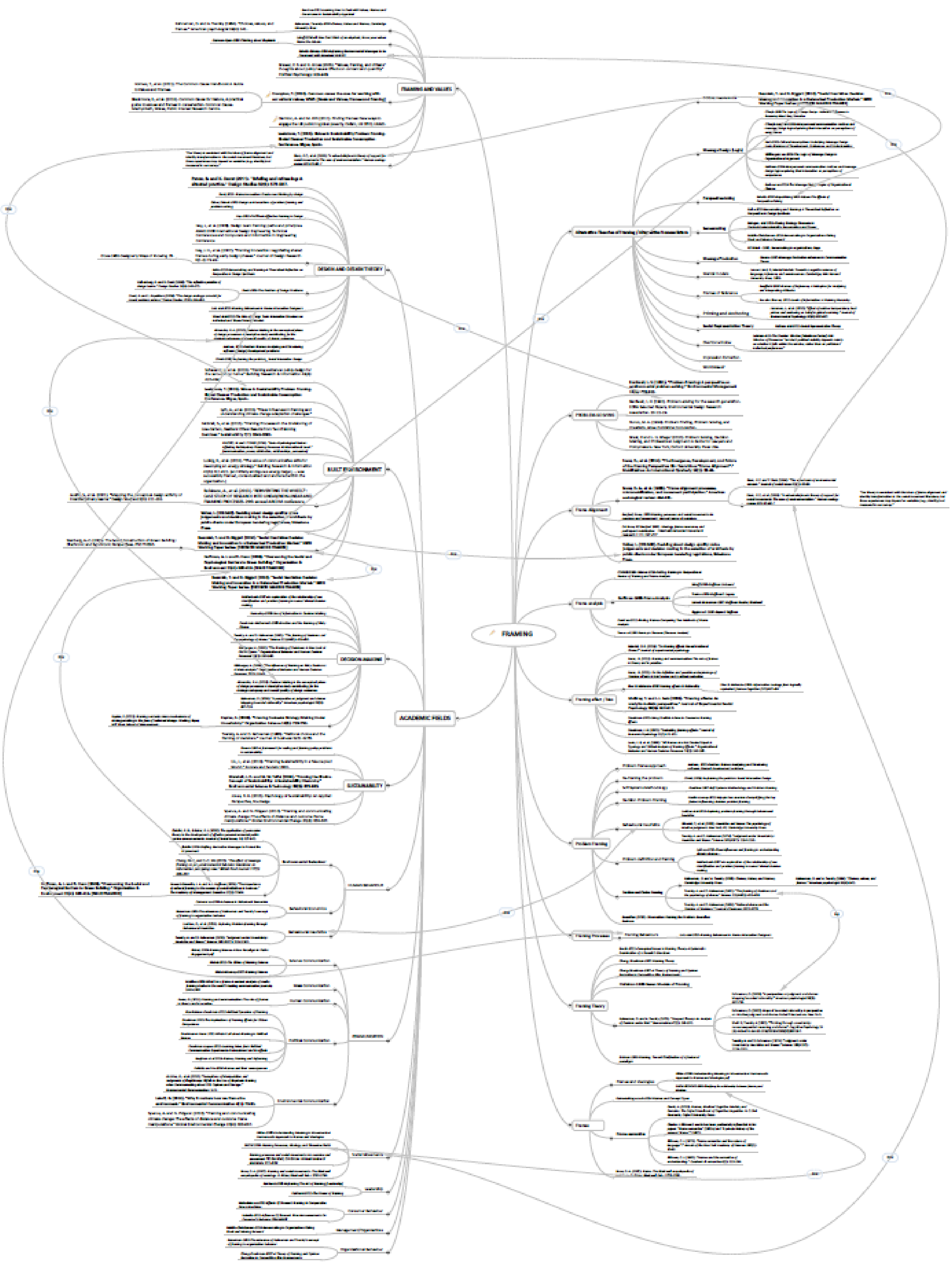
2.2.4 Search terms and procedures

Literature 'brought into' the review based on previous experience included (1) sustainability and sustainable development, with an initial foray into (2) pro-environmental behaviour, (3) values, and (4) decision-making. For the first wave of search terms, concepts and theories were identified in various streams of research starting with the core concepts that expanded on (1-4). It was quickly found that frames and framing were critical to decision-making, so the search then also addressed (5) frames and framing, and (6) any overlaps related to such research including (7) values and frames together, (8) their potential interrelationships. Germinal, current, and relevant literature were selected and examined, then cross referenced and structured in spreadsheets (Appendix-2.1). After populating broad and then focused spreadsheets, it became obvious that criteria (1-5) were overly broad and required further refinement, and more importantly that no empirical research was initially found on (7-8), only prospective work hypothesising their potential relationships and effects. Based on associations found therein, the search focused on (9) any relations of values and/or frames to: (9a) sustainability and/or environmental decision-making, (9b) pro-environmental behaviour, which could point to related determinants of behaviour. Similarly, this was extended to (9c) decision-making and (9d) 'decision-shaping' behaviours and (9e) processes thereof, as described in the literature itself. This was also extended to focused searches in (4a) design decision-making, (4b) problem-solving, and (4c) related topics, some of which addressed interrelations such as problem-definition or problem-framing. Section §2.3 below examines the core concepts, relationships and approaches, whereas §2.4-2.5 examines values-and-frames interactions and later literature which emerged during the research process on values-and-frames' relations with shaping decision processes and choice structuring based on key emergent factors arising from this research.

Following the Table 9 criteria and above search terms, (A) journal aims and scope, (B) paper titles, and (C) abstracts were reviewed, evaluated, and these key facts recorded in spreadsheets (Appendix-2.2). Relevant journals and papers were long-listed according to (D) academic disciplines and (E) discipline relevance, then refined by (F) topic relevance and (G) specificity to the review questions and aims. Key concepts/constructs were identified by (H) concluding significance as apportioned by the authors, J) frequency of appearance, and K) their relation to the preliminary research question and problem as foundations and influences of stakeholder decision-forming and decision-processing behaviour in this context. Together these directed the refinement of the central research questions which consequently focused the literature review to pinpoint directly relevant research and identify knowledge gaps when no extant research could accurately, directly respond to the research question. This established the immediate literature context of the research, knowledge gap, and guided the main study research design.

The search initially began to construct a start-set (Wohlin, 2014) then focused-set with references in the authors' personal library in two locations. First, Dropbox cloud-based file storage was searched with Copernic Desktop Search for both keyword title and full-text searches. These were added to the spreadsheet 'Literature Matrix' and ranked by relevance and citations as a measure of impact and import. The second search was via EndNote reference manager, with results exported to the Matrix. Duplicates were manually removed. To continue with theoretical sampling, online and physical library searches were conducted using three principal search engines (in order of priority in producing successful results) Google Scholar, the university's OneSearch, and Google Search. This was later supplemented with focused index searches, such as ScienceDirect and Web of Science. Mind-maps were used to outline key concepts, authors, and interrelationships (e.g., Figure 6).

Figure 6 (below) Example mind map of framing literature, outlining key concepts and authors, their relations and overlaps


FRAMING
FRAMING AND VALUES
DESIGN AND DESIGN THEORY
BUILT ENVIRONMENT
DECISION MAKING
ACADEMIC FIELDS
SUSTAINABILITY

Later as theoretical sampling started achieving initial saturation, key references were imported into EndNote and then directly into the writing and organised by concept/theme/category. The matrix was later updated with the full selection of papers reviewed; the References section serves as a record of relevant literature from the gap-finding literature review. Emergent literature following the above procedures was collected and listed, then shortlisted and added directly to EndNote.

2.3 Core concepts, relationships, and approaches

This section introduces core concepts necessary to understand sustainability, decision-making, values, and frames, to situate the research as first envisaged, and to interpret the exploratory findings. Later emergent aspects are introduced in §2.5. To understand the conditions and establish any broader need for improvements, various literatures were searched for considerations of what sustainability is, its importance, and why it is a challenge, to then examine what about sustainability is problematic and what can be done. Because literature identified the potential of values and frames to address this need, literatures were also examined for suggestions of what values and frames are and do, and how values are established and communicated. Literatures across multiple disciplines were searched for decision-making and any approaches related to design and/or sustainability. Finally, literature was searched for any links between values and frames, then with decision-making applicable to project sustainability outcomes in §2.4. Based on evolving research needs, literature is also introduced which emerged during exploratory studies in §2.5.

2.3.1 Sustainability and sustainable development

Pervasive human actions continue to transgress planetary boundaries (Steffen *et al.*, 2015), contribute to climate change (IPCC, 2018), thus threaten human life-

support systems (Shapira *et al*., 2017), implying improvements are necessary to sustain humanity. Architecture, engineering, and construction (AEC) contribute significant impacts—e.g., an estimated 40% of global energy use, 30% energy-related greenhouse gas emissions (UNEP-SBCI, 2006-2020). Unprecedented responses to manmade global environmental change, degradation, and resource depletion have highlighted a widening desire for tangible action to address human influences toward sustainability (Kopnina and Blewitt, 2018; Hulme, 2019). Understanding how such desires and awareness-raising translate into tangible, enduring practices implies that new thinking is required at alternative levels of analysis, beyond policy and regulation.

Planning regulations and local planning policies (NPPF 2012-2019) broadly set the principles of what can be built where and why. Regarding sustainability, they set minimum thresholds for social and environmental sustainability and building impacts, such as renewable energy and affordable housing. Whereas building regulations set more stringent technical requirements which include baseline performance criteria including sustainability, health and safety issues, e.g., thermal, energy, sound, fire, access, etc. (Hamza and Greenwood, 2009; Gibbs and O'Neill, 2015). These set the minimum legal requirements for a particular building type and size in any given location, are assessed locally, but are not all 'set-in-stone' therefore frequently subject to interpretation and what can broadly be called 'allowable solutions' (O'Neill and Gibbs, 2018) which can be varyingly sustainable. More aspirational strategies and measures exist to improve on baselines, but remain voluntary and attract additional costs (cf. PassivHaus (Dowson *et al*., 2012), LEED and BREEAM (Kubba, 2017), etc.). Together these problems drive unresolved questions about how sustainability could be established less-contestably and more individually-meaningfully in projects.

In AEC, this thinking plays out in project communication and decision-making processes, but manifests in artefacts with varying degrees of sustainability due to

many barriers (Zhang *et al*., 2019) at not only individual (Lambrechts *et al*., 2019) and interpersonal levels (Islam *et al*., 2019), but also barriers from interactions between technical and social factors in sustainability improvements (Martek *et al*., 2019). Problematically, sustainability remains a contestable concept (Schroeder, 2018), which creates barriers to establishing its' meaningfulness as a basis for its pursuit. Such interpersonal barriers contribute to project sustainability being realised with varying degrees of success (Klotz *et al*., 2018; Shealy *et al*., 2019). This can translate into projects being downgraded to minimum statutory requirements, despite initial willingness to 'do better' (Goebel *et al*., 2018). This clearly raises the question of whether the meaning and import of project sustainability are sufficiently established for key decision-makers and therefore have become a pressing matter. It suggests that the significance of long-term project impacts associated with sustainability is inadequately embedded in immediate, short-term thinking (cf. Harty *et al*., 2007; Houghton and McGranahan, 2010). Such human barriers to sustainable, green building remain a rich and worthwhile area of research. They therefore represent clear and present opportunities to secure more stable futures through better thinking joined-up with decision-making towards more sustainable project outcomes.

As starting points, definitions of sustainability outlined in Table 10 informed this research. Broad conceptualisations of sustainability (D1-D2) can be applied in the context of human endeavours through the concept of sustainable development (D3). The Royal Institute of British Architects (RIBA) communicates sustainability for practicing architects by adapting the UN's widely-accepted Brundtland definition (D4).

Table 10 Four definitions of sustainability informing this research

#	Scope	Definition
D1	The broader concept of sustainability	*"[S]ustainability means transforming our ways of living to maximize the chances that environmental and social conditions will indefinitely support human security, well-being and health" (McMichael (2003) in White (2013:214)).*
D2	A less human-centred characterisation	*"[S]ustainability as the possibility that all forms of life will flourish forever" (Ehrenfeld, 2005:24).*
D3	The UN's widely-accepted Brundtland definition defines sustainable development	*"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (UN-WCED, 1987; quoted in Sullivan (2012:5))".*
D4	A more accessible definition offered by the "RIBA Green Guide"	*"Three contributory elements of sustainable development: community welfare, economic sufficiency, and environmental enhancement (Halliday, 2007:5)".*

These broad starting points have been developed into more practical, operational categories by the Chartered Institute of Architectural Technologists (CIAT). CIAT have disaggregated the Brundtland definition into more immediately useful, operational constituent components, Table 11, which are considered concepts easily recognised and employed by participants in this research.

Table 11 Components of sustainability in built environment design (adapted from CIAT, 2019)

Keywords	Component definition
Balance: social, economic, environmental	Balance between maximising social and economic benefits and minimising environmental costs
Knowledge	Knowledge and relationship of latest developments in sustainable building design
Minimising environmental harm	Minimise harm inflicted upon the environment by the design
Sustainable approach; Long-term benefits	Awareness of the long-term benefits of adopting a sustainable approach
Lifecycle versus capital costing	Use of appropriate costing approaches such as life-cycle costing versus capital budgeting
Efficient site use	Efficient use of the existing site to minimise energy use and maximise site advantages
Environmental conditions; Energy consumption	Use of environmental conditions to minimise energy consumption
Renewable energy use	Use of free (renewable) energy sources
Environmental impact	Lowest possible environmental impact of materials and processes
Resources	Use of existing and local resources
Materials reuse; recycling; Waste minimisation	Reuse and recycling of materials to minimise waste
End-of-life	Consideration of end-of-life disassembly, recovery, and recycling
Safety and comfort	Design of safe and comfortable internal environment

To this is appended a brief set of Key Performance Indicators (CIAT), summarised in Table 12. Together these broadly represent the indicators adopted in the research to detect key informant's use of frames, frame packages, and framing processes regarding sustainability.

Table 12 Key Performance Indicators for sustainable building (CIAT, 2016)

Indicator Keyword	Indicator definition
Energy, operational and embodied	Energy measured in CO_2 emissions produced in energy supply and creation of materials in construction and operation
Water consumption, operational	Mains water supplied in operation
Waste, construction process	'Unrecyclables' sent for disposal in construction
Transport, operational and construction	Impact of vehicle movements to and from the site, in construction and operation
Biodiversity	Impact on maintenance, protection, and improvement of local flora and fauna

2.3.2 Interpreting sustainability, via frames

It is well-established that the design, construction, and maintenance of buildings and built environments contribute significant impacts to sustainability (deWit *et al*., 2020; UNEP-SBCI, 2006-2020) as it is envisaged through the above concepts. Building's impacts are mitigated at multiple levels, not only through broader-scale aspirational and statutory instruments (e.g. Cole and Valdebenito, 2013; O'Neill and Gibbs, 2018), but also through more informal individual (Lambrechts *et al*., 2019) and group commitments (Elforgani and Rahmat, 2010). In the UK, mitigation is managed incrementally by changes to planning legislation (cf. NPPF, 2012; NPPF2, 2018-19) and building regulations (Gibbs and O'Neill, 2015). However, these instruments and development controls are subject to various interpretations not only by officials, but also project clients and stakeholders (e.g. Upham, 2000; Rodriguez-Melo and Mansouri, 2011; Birkeland, 2012; Raslan, 2018). Sustainability regulations can be viewed by decision-makers as lowest common denominators (duPlessis, 2009), pessimistically (Campbell, 1996) e.g., as

glass ceilings, or optimistically (Upham, 2000) e.g., as starting-points or springboards.

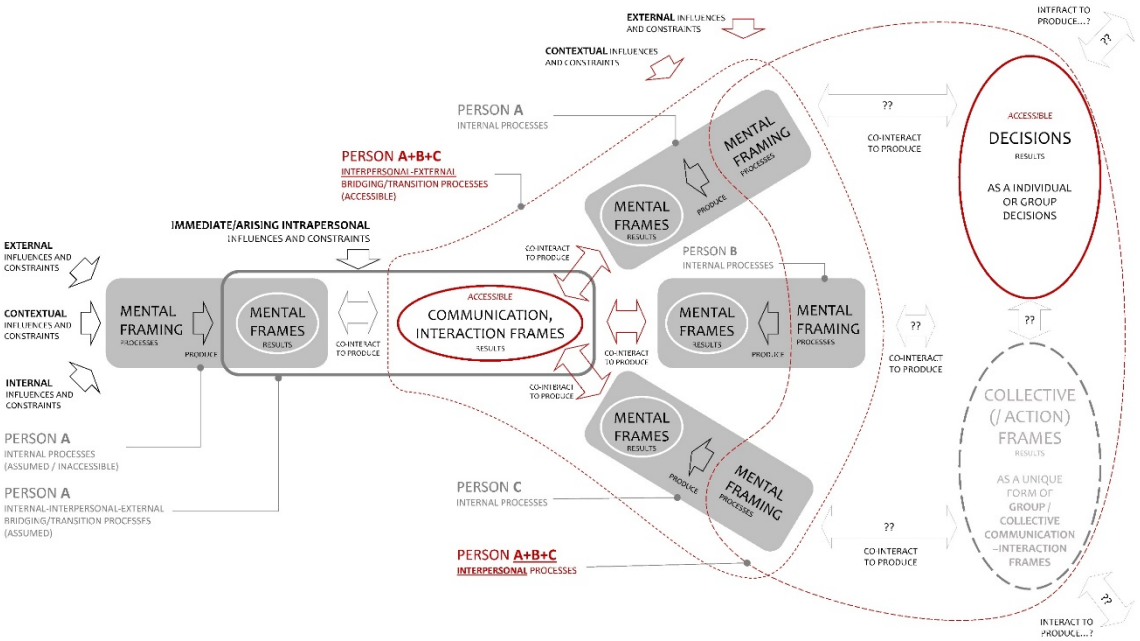
Except within unambiguous, prescriptive regulations, the meaning and interpretation of sustainability remains a contested concept not only within AEC (Schroeder, 2018) and business contexts (Connelly, 2007; Lankoski, 2016), but also among citizens and governments particularly as unsustainability shares many drivers with climate change, yet both remain inconvenient truths (Gore, 2017). Such factors are persistently downplayed or denied by media and politicians (Bain *et al*., 2012) which contributes to individuals making unlikely and unfavourable interpretations (Lewandowsky *et al*., 2015; Nisbet, 2009). Hence, to construction clients and decisionmakers sustainability can easily appear as unappealing (Rodriguez-Melo and Mansouri, 2011), full of impenetrable abstractions about distant possibilities (Maser, 2012), and devoid of context and individual meaningfulness, leading to dismissing viable alternatives, discounting, and endangering futures (Voinov and Farley, 2007; Weber, 2017).

As abstractions, one way that sustainability and longer-term impacts can be translated into more meaningful, tangible project outcomes is by building design and construction (BD&C) professionals through briefing and decision-making processes (Chick and Micklethwaite, 2011; Wiltschnig *et al*., 2013). As key, central actors frequently involved in day-to-day decision-making throughout the BD&C process (Brown, 2002; Ali *et al*., 2008), architects are well-placed to interpret individual requirements, translate abstractions like sustainability in more contextually-meaningful ways, and help address potentially less-sustainable outcomes (Sullivan, 2012; Halliday, 2007). Helping key project decision-makers make such decisions more meaningfully is clearly critical to translating and embedding project sustainability (Buhl *et al*., 2019). One way to contextualise and link sustainability more meaningfully to decisions is through architects discussing and translating client and stakeholder requirements (Kamara *et al*., 2002; Kasali

and Nersessian, 2015) via framing and reframing (Paton and Dorst, 2011) in decision-making processes—a skill designers already employ (Dorst, 2015). This notion of interpretations is integral to establishing sustainability meaningfully (Owens and Cowell, 2011) and central to the concept of frames (McGrail *et al*., 2015; de Vries *et al*., 2015)—the way 'decision-problems' are framed play significant roles in decision-making (Shealy *et al*., 2016) because they communicate meaning.

Framing (how) and *frames* (what) (Lahtinen and Yrjölä, 2019) operate at multiple levels (Cornelissen and Werner, 2014). *Framing in communication* concerns the act of bounding or describing choice options (i.e., specifying viable decision alternatives (e.g., Maule and Villejoubert, 2007)) to communicate their meanings in different ways; *communication frames* can then be considered as the results, artefacts, or tools (ibid., 2014; Shealy *et al*., 2016; Klotz *et al*., 2018). *Cognitive frames* "designate interpretive structures that render events and occurrences subjectively meaningful, and thereby function to organize experience and guide action" (Snow, 2007:1778). Where *decision-problem-frames* capture people's understanding as e.g., focus, level, and characterisation of a problem/issue for decision, *frames of reference* are when, "in a decision-making or social judgment scenario, individuals construct cognitive frames that compare it [decisions/judgements] in detail to a relevant reference point, or baseline (Cornelissen and Werner, 2014)". Framing interactively consists of "dynamic and socially situated processes of meaning construction (*ibid*., 2014:183)". A conceptualisation of framing as multiple linked processes is depicted in Figure 7.

Figure 7 (below) Conceptualisation of three levels of frames (mental, communication, collective action) and framing as multiple linked processes, with areas of focus 'accessible' to the research shown in red


EXTERNAL INFLUENCES AND CONSTRAINTS
CONTEXTUAL INFLUENCES AND CONSTRAINTS
INTERACT TO PRODUCE...?
??
PERSON A
INTERNAL PROCESSES
PERSON A+B+C
INTERPERSONAL-EXTERNAL BRIDGING/TRANSITION PROCESSES (ACCESSIBLE)
MENTAL FRAMING
PROCESSES
MENTAL FRAMES
RESULTS
PRODUCE
??
CO-INTERACT TO PRODUCE
ACCESSIBLE
DECISIONS
RESULTS
AS A INDIVIDUAL OR GROUP DECISIONS
IMMEDIATE/ARISING INTRAPERSONAL INFLUENCES AND CONSTRAINTS
EXTERNAL INFLUENCES AND CONSTRAINTS
CONTEXTUAL INFLUENCES AND CONSTRAINTS
INTERNAL INFLUENCES AND CONSTRAINTS
MENTAL FRAMING
PROCESSES
MENTAL FRAMES
RESULTS
PRODUCE
CO-INTERACT TO PRODUCE
ACCESSIBLE
COMMUNICATION, INTERACTION FRAMES
RESULTS
CO-INTERACT TO PRODUCE
CO-INTERACT TO PRODUCE
PERSON B
INTERNAL PROCESSES
MENTAL FRAMES
RESULTS
MENTAL FRAMING
PROCESSES
PRODUCE
??
CO-INTERACT TO PRODUCE
??
COLLECTIVE (/ ACTION) FRAMES
RESULTS
AS A UNIQUE FORM OF GROUP / COLLECTIVE COMMUNICATION -INTERACTION FRAMES
PERSON A
INTERNAL PROCESSES (ASSUMED / INACCESSIBLE)
PERSON A
INTERNAL-INTERPERSONAL-EXTERNAL BRIDGING/TRANSITION PROCESSES (ASSUMED)
MENTAL FRAMES
RESULTS
MENTAL FRAMING
PROCESSES
PRODUCE
PERSON C
INTERNAL PROCESSES
PERSON A+B+C
INTERPERSONAL PROCESSES
??
CO-INTERACT TO PRODUCE
INTERACT TO PRODUCE...?

Framing bias is the effects of presenting or bounding otherwise equivalent information (*ibid*.), e.g., in terms of gains, losses, or change relative to now or later. Decision *reference point bias*, or *Prospect Theory* (Kahneman & Tversky, 1984), importantly relates to problems of underestimating (distant) future possibilities (*ibid*., 2018), thereby discounting likely outcomes (Voinov and Farley, 2007), particularly when possibilities concern future human and non-human others (*ibid*., 2007; 2018). Frames are perceived differently by decision-makers under various conditions; because framed options influence people's interpretations of outcome likelihood and desirability, they impact sustainability decision outcomes—*framing effects* are the consequences (Shealy *et al*., 2016; Klotz *et al*., 2018). *Frame effects* create unintentional boundaries. But these effects can be harnessed (*ibid*., 2016) to structure and inform the quality and characteristics of 'spaces' to consider—and frame—project decision options about sustainability more meaningfully. However, these studies overlook or underappreciate that without motivations to connect with sustainability, it is more likely to be squeezed out of decision-making discussions, examined below.

2.3.3 Motivating sustainability, via values

Reports are conflicting about motivation and drivers to adopt more sustainable practices in UK construction, and vary e.g., by project-type, organisation, or discipline (cf. Belfitt *et al*., 2011; Abuzeinab *et al*., 2017; Murtagh *et al*., 2016; 2018). Whilst some clients and decision-makers are motivated to pursue sustainability from policy, market, or publicity forces, such drivers unlikely to motivate the public, private, and third sectors similarly (cf. Dadhich *et al*., 2015; Vanpoucke, 2014; Badi, 2017; Phua, 2018). Related studies have shown how, like sustainability, pro-environmental behaviour is motivated by a variety of individual and interpersonal drivers in which human values are established as consistently key underpinning and enduring motivators and drivers (cf. Stern *et al*., 1998; Steg

et al., 2014; Winter and Koger, 2014). Values are important for sustainability because they are well-known to be an effective fulcrum to drive social and organisational change (Harder and Burford, 2018; Holmes *et al*., 2011) primarily because they can motivate individual decision-making (Schwartz, 1992) *and* pro-social behaviour (Schwartz, 2010). Crompton (2013) characterises the need to understand values in the context of environment and sustainability:

> *"Values are the aspects of people's identities that reflect what they deem to be desirable, important and worthy of striving for in their lives (Rokeach, 1973; Schwartz, 1992). [...] Values are important in thinking systemically about environmental problems because they are understood to reflect higher-order motivations that organise the attitudes and behaviours that constitute many aspects of people's day-to-day lives (Emmons, 1989; in Crompton, 2013)."*

Schwartz argues that, as motivational constructs, "Values Theory defines *values* as desirable, trans-situational goals, varying in importance, that serves as guiding principles in people's lives" (Schwartz, 2009:249). Formed through a variety of personal, social, and environmental influences (Stern *et al*., 1995), values are prioritised (*ibid*., 2009), relatively stable but impermanent longitudinally (Vecchione *et al*., 2016), and subject to contradiction, such as the cognitive dissonance experienced when strongly held beliefs are in competition, e.g., valuing environmental protection *and* pursuit of profit (Harmon-Jones and Mills, 1999). Because this research embraces pluralism as core facet of research philosophy, it is appropriate to permit plural views of values (Harder and Burford, 2018). This also recognises the social and psychological dimensions values in projects (Kelly *et al*., 2014) by locating their source in individuals subjectively, and their interpersonal communication intersubjectively; such perspective allows values' abstraction into values statements and broader indicators for comparison (Harder and Burford, 2018), thus helping to overcome unmanageable over-subjectivity (Odii *et al*., 2020).

Human values are increasingly recognised in 'soft' project management (Mills, 2013) for design and construction sustainability that seeks new routes for value creation (Novak, 2014) through better engagement with people in holistic, open, and meaningful ways (Ratner, 2004). Engaging effectively with values potentially helps avoid making easily-overturned gains, e.g., achieved through financial incentives (Rodriguez-Melo and Mansouri, 2011) or selective provision of information (Kollmuss and Agyeman, 2002) to influence outcomes of planned interactions and interventions(Holmes *et al.*, 2011)—like AEC projects and the decision-making processes they entail. Knowing this, relationships between decision-making and values are examined in §2.4.

Values definitions, conceptualisation, and their use varies across disciplines and purposes (Cheng and Fleischmann, 2010). In this research, *human values* signify judgements of what is most important, worthwhile, and meaningful to individuals and are foundational, underpinning motivators and drivers of behaviour and decision-making (Cheng and Fleischmann, 2010; Schwartz, 2012). Values are pertinent for three reasons. Firstly, values are accessible human variables in stakeholder and professional interpersonal processes that influence decisions and outcomes (Verplanken and Holland, 2002; Sagiv *et al.*, 2011). Secondly, values are identifiable, relatively stable, and measurable through established methods of self-reporting (Schwartz, 2012), facilitated elicitation (Zhang *et al.*, 2006; Harder and Burford, 2018), and corroboration (Dobewall *et al.*, 2014; Skimina and Cieciuch, 2017). Thirdly, values have some shared meanings across cultures, providing a universal dimension that may allow some transferability of findings across contexts (Schwartz, 2011; Roccas and Sagiv, 2017). Because values encompass aspects of both meaning and practice (Harder and Burford, 2018), this research recognises the individual, interpersonal, and contextual facets, allowing for "values as they are defined and understood in local contexts" (Podger, 2016:236). Although values are well-established as important fundamental motivators, they

garner disproportionately less recognition in AEC sustainability decision-making. Taken together, this therefore suggests that values may be useful as indicators and influencers of sustainability decision-making behaviours. But to be completely clear about what values are also requires an understanding of the differences between values and value.

2.3.4 Distinguishing values and value

Value is typically a more 'objective' property (Mills, 2013) of relative desirability or worth ascribed to an object or goal, described as "the relationship between satisfying a need and the resources consumed in doing so" (BSI, 2000), and sometimes associated with financial quantification of goods, assets, and services. Whereas *human values* typically concern more abstract, subjective, and relative ideals, goals, or states as desirable, meaningful, and significant in the conduct of one's life (cf. Hitlin and Piliavin, 2004; Kluckhohn, 1951; Rokeach, 1973; Schwartz, 2009). Mills (2013) considers 'value' as an attitude or judgement of such trade-offs, but 'values' as akin to human beliefs. This research therefore must also distinguish between *values* as abstract but relatively stable behavioural guides, and *attitudes* as "amorphous", more fleeting and unstable reactions—"a state of readiness" influencing responses to related objects and situations (Mills, 2013:156-157). Problematically, attitudes are formed of affective feelings, cognitive beliefs or knowledge, and behavioural inclinations (Crano and Prislin, 2011; Mills, 2013), thus contributing to their amorphousness and difficulty to establish, which potentially precipitated Mills' (2013) association of value with attitude. Both values and value have been studied separately (Zhang *et al*., 2006; Novak, 2013) and together (Mills, 2013) in AEC design management, the latter very infrequently, likely because of their potentially perceived qualitative subjectivity lacking quantitative measurement. *Value equations*, such as those reviewed and used in Mills (2013) (e.g. BSI, 2000; Kelly *et al*., 2004), have been useful for describing relations between factors giving rise to conceptions of value,

such as individual's judgement of the best balance between give/get (Mills, 2013). An example from Mills' (2013) work equates $Value = \frac{Benefits - Sacrifices}{Resources}$ and is broadly representative of others like BSI (2020). However, these focus more on factors' static relations—no equations were found to include aspects of communication like frames, nor do they treat dynamic interactions over time which could be useful for understanding and managing change.

Whilst this research originally began studying human values and decision-making, it was later found that exploratory studies of values-and-frames required a 'thick' interpretation (after Ryle, 1971) of values as the concepts project decision-makers/stakeholders interpreted as worthwhile, meaningful, important, significant in context. This conception of values involved the relative individual, qualitative value and/or values, such as valuing peace and tranquillity, collaboration, or quick profit. It ultimately meant that financial, quantitative value (e.g., of an asset, or a cost) could be translated into more abstract qualitative values, such as valuing cost savings more than sustainable energy, or profit over outdoor amenity. This research is less about understanding values trade-offs, but focuses on the relationships between values-and-frames' content and process giving rise to decisions varyingly favourable to sustainability, such as how certain frames' content and timing would influence valuing e.g., roof gardens more than profit. This position is commensurate with a pragmatic plural interpretive constructionist approach because it accounts for *any* subjective values as conceived or expressed by individuals from personal to collective levels, as encouraged by the 'WeValue' contextualised values approach (Harder and Burford, 2018). However, studies on value and values overlook or underappreciate the need to understand the role of communication in contextualising values. Having established the relevance of values and frames separately to sustainability, literatures were examined for any insights on values-and-frames together as relevant to sustainability, and decision-making favouring it.

2.3.5 Design decision-making and problem-solving

As a principal channel to establish project sustainability, effective decision-making in design and construction is central to AEC sustainability (Ding, 2008). To know more about influences in design decision-making processes applicable to sustainability, literature was examined on decisions, decision-making, and decision processes as applicable to design and AEC. Definitions and characterisations of decision-making and problem-solving are numerous, as the representative selections in Table 13-Table 15 show. 'Problem-solving' is a systematic process of defining a decision-problem (an issue, problem, or challenge) and creating a solution (Figure 8) (cf. Bardwell, 1991, Newell and Simon, 1972), whereas 'decision-making' is selecting a course of action among available and potentially competing alternatives (Brest and Krieger, 2010).

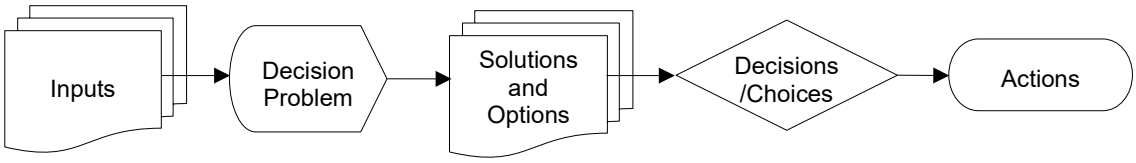


Figure 8 A generic problem-solving process
(after Newell and Simon, 1972; Bardwell, 1991; Brest & Krieger, 2010

Table 13 Components of a basic decision-making process (Based on Swami, 2013)

Step	Component	
1	Define a decision-problem	START
2	Determine available options	
3	Consider all the alternatives	
4	Weigh the positives and negatives of each option	
5	Forecast the outcome of each option	
6	Determine which option is the best for the situation	
7	Select a logical choice (with a final choice as output (action, opinion, etc.)	Cognitive processing

Table 14 Basic definitions

Decision-making	
1	The cognitive process of reaching a decision.[1]
2	The act or process of making choices or decisions [alone or] with a group of people, especially in business or politics.[2]
Syn.	*Deciding*
Decision	
1	A conclusion or resolution reached after consideration.[1]
2	A position, opinion, or judgment reached after consideration.[1]
3	The act or process of deciding; determination, as of a question or doubt, by making a judgement.[2]
4	The act of, or need for, making up one's mind.[2]
Syn.	*Conclusion; decisiveness; determination*
1	*Princeton WordWeb Dictionary*
2	*Collins Dictionary at Dictionary.com*

For this research, a conventional definition of decision-making forms a foundation based on its logic and representativeness of others (Table 15). "Decision-making refers to the mental (or cognitive) process of selecting a logical choice from the available options. It implies assessing and choosing among several competing alternatives" (Swami, 2013:204). This echoes many characterisations in AEC literature. Project decisions are not isolated, therefore for an effective decision-making process, "a person must be able to forecast the outcome of each option, and based on all these items, determine which option is the best for that particular situation (*ibid*.)". As output, "every decision-making process produces a final choice. The output can be an action or an opinion of choice" (Reason, 1990; in Swami, 2013:204). Decision-making outcomes are, if accurately 'forecast', predictable (*ibid*.) (however likely). To simplify, each component of a basic decision-making process is decompiled in Table 13 above.

Table 15 Representative definitions associated with design decision-making and decision-making processes

Aspect	Definition and elaboration
Decision-making	"Decision-making refers to the mental (or cognitive) process of selecting a logical choice from the available options. It implies assessing and choosing among several competing alternatives. […] To make a good decision, a person must weigh the positives and negatives of each option and consider all the alternatives. […] A person must be able to forecast the outcome of each option, and based on all these items, determine which option is the best for that particular situation" (Swami, 2013:204).
	"Lexicographic decision-making refers to a method of evaluating alternatives in which the alternatives with the most desirable **attribute values** among the attributes **that are emphasized the most** are the most highly regarded. …the [contingent weighting] model includes the assumption that decisions are made in a form resembling the lexicographic order in which prominent attributes are weighted more heavily in the selection problems [than in pricing problems]" (Takemura (2014), discussing Tversky *et al*., (1988)).
	"Decision-making is a way to align expectations and needs to reach goals (Hodgkinson & Starbuck, 2008a). […] Individual decisions are made by processes that are range from rational to intuitive and conscious to unconscious (e.g., Chaiken & Trope, 1999; Hogarth, 2005; Sadler-Smith & Sparrow, 2008)" (Volker, 2010:4).
	However, "'decision-making is essentially social behaviour, even when there is nobody else present, because one anticipates how others will react and factors this into the decision. […] Organizations *per se* do not make decisions, but individuals in organisations do. And when they do, they must take others into account (Beach and Connolly, 2005:23)'. This context influences the process and outcome of the decision (Balogun *et al*., 2008)" (Volker, 2010:55-56).

(Continued below)

Table 15 (cont.) Representative definitions

Aspect	Definition and elaboration
Decision process and Decision-making process	"In the conventional approach to decision-making, the principal ingredients of a decision process are (a) a set of alternatives; (b) a set of constraints on the choice between different alternatives; and (c) a performance function which associates with each alternative the gain (or loss) resulting from the choice of that alternative" (Bellman and Zadeh, 1970:147).
	"[D]ecision-making is an iterative process of different kinds of value judgements, resulting in different kinds of product values. These values are not easy to sum up and justify as one 'truth' because they are based on perceptions of the group members" (Volker, 2010:35).
	"[D]ecision-making is a process of goal setting, perception, information processing, framing, comparison, evaluation, deciding on action and finding decision support which occurs at individual as well as on the level of the team (Beach and Connolly, 2005; Hodgkinson and Starbuck, 2008)" (Volker, 2010:120).
	"…every decision-making process produces a final choice. The output can be an action or an opinion of choice" (Reason, 1990; in Swami, 2013:204).
Design decision-making	"[D]esign is itself the process, operation, or procedure of decision-making plus intellect, creativity, and passion together in a process of translation, which includes defining, learning, representation, and deciding" (National Research Council, 2001:4).
	Design decision-making, "is integral to the engineering design process and is an important element in nearly all phases of design. Viewing engineering design as a decision-making process recognizes the substantial role that decision theory can play in design" (Lewis et al., 2006).
	"One of the most relevant aspects in modelling the design process is decision-making. (Simon, 1969/1996) noted that decision-making and design are so intertwined that the entire decision-making [process] might be viewed as design" (Christiaans and Almendra, 2010:642).
Design decision-making process	Examining one type of design decision-making (ethical), d'Anjou (2011:46) argues that "the [design] decision-making process usually follows a standard cycle: setting the problem, analysis, proposed solution, and evaluation" (2011:46). Quoting Whitbeck (1998), "in a typical example of this process, …[t]he steps that she proposes are: research of the questions, analysis of the situation, proposal generation, evaluation, and choice" (Whitbeck, 1998; in d'Anjou, 2011:46).
Design decision processes	Hansen & Andreasen (2004) posit three further points forming design decision processes, involving: 1) knowledge of the design decision process (acquired from training and practice), which contributes to optimal decision process design; 2) the broader perspective of designing and managing the business; and 3) how the design project can contribute to the business goals.
Design thinking	A way of thinking iteratively, inductively, and/or abductively about and solving design problems. "[T]he knowledge processed in design thinking has to be neither representative (as in inductive thinking) nor entirely rationalized (as in deductive thinking), rather it serves to obtain an exemplary but multi-perspective comprehension in order to deal creatively with the ambiguity of wicked problems" (Lindberg *et al*., 2011:4).
	Thus, Dorst (2011) argues that in abductive design thinking, "experienced designers tend to have much more deliberate (and efficient) strategies to tackle the complex creative challenge of coming up with BOTH a 'thing' and its 'working principle' that are linked to the attainment of a specific value. These strategies involve the development or adoption of a 'frame'. …a '**frame'** is the general implication that by applying a certain working principle we will create a specific value" (Dorst, 2011:525). Thence, design thinking is abductively devising an unknown 'thing' and an unknown 'working principle' which facilitate the known/desired 'value', e.g., state, endpoint, product, or building.

(Continued below)

Table 15 (cont.) Representative definitions

Aspect	Definition and elaboration
Design	"Design can be defined as the intentional shaping of matter, energy, and process to meet a perceived need or desire. It is the hinge that inevitably connects culture and nature through exchanges of materials, flows of energy, and choices of land use. In many ways the environmental crisis is a design crisis. It is a consequence of how things are made, buildings are constructed and landscapes are used" (Van der Ryn and Cowan, 1996; in Kibert et al., 2003:233).
	Design can be messy, irrational, and inaccurate; and design decision problems are frequently ill-defined and/or ill-structured (Goldschmidt and Weil, 1998).
Evaluation	"Evaluation can be defined as inquiry that establishes the value and goodness of a practice based on insiders' and contextual knowledge" (Abma and Widdershoven, 2011:670) where values "guide the selection or evaluation of actions, policies, people, and events. That is, values serve as standards or criteria" (Schwartz, 2009:249).
Implicit evaluation	"Implicit evaluation can be defined as the automatic effect of stimuli on evaluative responses. A major advantage of this definition is that it is neutral with regard to the mental processes and representations that mediate implicit evaluation. Whereas many existing models postulate that implicit evaluation is mediated by the automatic spreading of activation along associations in memory, it is also possible to entertain the idea that implicit evaluation is due to the automatic formation or activation of propositions. [I]mplicit evaluation (a) can be based on instructions and inferences, (b) is sensitive to information about how stimuli are related and (c) can reflect several propositions that differ only with regard to how stimuli are related" (Houwer, 2014:342). This suggests that values and frames may be interlinked with implicit evaluations.
Participatory evaluation	"Inspired by Greene (1997), an evaluation can be defined as participatory if a variety of different stakeholders are involved, if their views, values, and preferences enter into the evaluation criteria and/or the evaluation process with some weight and some element of cooperation between them takes place. Most participatory evaluations include various types of stakeholders and pay special attention to the users of the evaluation (not of services) (i.e., decision makers, project managers, organized stakeholder groups, etc.) (Denzin and Lincoln, 2017:1508).
Evaluation and **prediction in design**	"Evaluation [in design] can be defined as measuring the fit between achieved or expected performances to stated criteria. Prediction is the process whereby expected performance characteristics are simulated, or otherwise made tangible, when evaluation is applied to hypothetical design solutions. The multifaceted nature of design solutions precludes optimization of any one performance characteristic. Rather, a good design solution will strike a balance in the degree to which any performance criterion is achieved, such that overall performance will be maximized" (Kalay, 1992:399) such as with architectural design balancing needs and sustainability.
Generative micro-decisions in design	Akin and Lin (1995) suggest the notion of generative micro-decisions, formed in the context of a design process which includes (summarising): ▪ Formulating design problems ▪ Generating design concepts ▪ Representing designed objects, internally and externally ▪ Application of design thinking, knowledge, and skills ▪ Situated micro-learning and associated thought processes
Problem-solving	"If 'problem-solving' consists of 'trying to move the world in the desired direction,' it must ultimately eventuate in a decision—a 'commitment to a course of action that is intended to produce a satisfying state of affairs (Yates *et al*., 2003)' (Brest and Krieger, 2010:10-11)."
	Harris Jr. *et al*., (2013) advocate a "creative middle way" (2013:19,84) where Hansen and Andreasen (2004) offer several additional facets to aid designers, proposing that the solution should be fit-for-purpose, and only validated as acceptable if so judged (2004). Part of deciding in design entails 'navigating through the solution/activity space' and 'unifying' the outcomes/outputs of design decisions "into consistent wholes (2004:3)".

(Continued below)

Table 15 (cont.) Representative definitions

Aspect	Definition and elaboration
Decision-problems	Newell and Simon (1972) establish that a decision problem is the *difference* between a current unsatisfactory condition and a desired alternative or future condition or state (cf. Brest and Krieger, 2010; Newell and Simon, 1972). The decision 'problem' could be seen neutrally as a state or condition; negatively as source of difficulty or challenge; or positively as an opportunity. Addressing the decision problem—deciding—is the attempt to move between current and future desired states via various actions potentially not initially obvious to a decision-maker (*ibid*., 2010). This movement happens across or through what Newell and Simon (1972) notably called the 'problem space' (see Figure 9). A design decision problem is seen as a context-specific subset of the parent set of problems in Newell & Simon's (1972) problem-solving and subsequent renderings.

Design research addresses decisions and their parent decision-making processes from various nuanced perspectives: decision-making (Lewis *et al*., 2006); problem-analysis and problem-solving (Harfield, 2007; Kokotovich, 2008); interactions of problem-framing and problem-solving (Dzbor and Zdrahal, 2002); problem-solving as Design Thinking (e.g. for innovation) (Buhl *et al*., 2019), as reflective practice (Schön, 1983; Valkenburg and Dorst, 1998), or problem-solution co-evolution (Dorst and Cross, 2001). One view suggests that design is itself the process, operation, or procedure of decision-making plus intellect, creativity, and passion together in a process of translation, which includes defining, learning, representation, and deciding (National Research Council, 2001). This is supported by Simon (1969/1996) whereby, "decision-making and design are so intertwined that the entire decision-making process might be viewed as design (Christiaans and Almendra, 2010:642)". Another view confirms that decision-making, "is integral to the engineering design process and is an important element in nearly all phases of design. Viewing engineering design as a decision-making process recognizes the substantial role that decision theory can play in design (Lewis *et al*., 2006)".

Rather than a series of practices unfolding over time, building design and construction (BD&C) is inherently a process, but a poorly integrated one, and can therefore benefit from borrowing other industry's process-led perspectives in response to repeated calls (Latham, 1994; Egan, 1998; Cooper *et al*., 2008).

Borrowing from well-established manufacturing successes, a process-level view of BD&C activities allows examining both discrete practices and high-level operations for improved outcomes (*ibid*., 2008). Understanding design decision-making as a process permits a broader, more holistic view of how values-and-frames may interact to inform or influence project decision-making about sustainability longitudinally. Moreover, process-level findings, their underpinning factors, and specifications are more widely applicable in individual and interpersonal interactions (Weber and Johnson, 2011; Zerjav *et al*., 2013) particularly when they concern underpinning driving factors such as values-and-frames influences. Process-level findings have been critical to interpersonal and behavioural decision science (Appelt *et al*., 2011; Weber and Johnson, 2006; 2011) and are therefore applicable to project contexts, precisely because they help make tacit and implicit, intangible factors understandable and accessible—more transparent—therefore potentially leverageable and actionable. Process transparency contributes to sustainable building delivery by clarifying composite cognitive activities such as framing in decision-making to aid processes' visibility and accessibility (Klotz *et al*., 2009) toward discovering new opportunities, e.g., for value creation (Womack and Jones, 2013) and meaningfulness. Understanding key underpinning factors and their interlinkages towards process-level findings are potentially critical to sustainability improvements.

Decision science and decision psychology take overlapping approaches to decision analysis and supporting theories (cf. §2.4.1-2.4.2). "In the conventional approach to decision-making, the principal ingredients of a decision process are (a) a set of alternatives; (b) a set of constraints on the choice between different alternatives; and (c) a performance function which associates with each alternative the gain (or loss) resulting from the choice of that alternative (Bellman and Zadeh, 1970:147)". Decision psychology and behavioural economics study people's decision-making behaviour under various conditions and report that human

decision-making is messy, irrational, and inaccurate (cf. Kahneman and Tversky, 2000; Johnson, 2012; Klotz, 2018). In decision-making for design, *framing bias* or the *framing effect* (DeMartino *et al*., 2006) concerns the presentation or framing of quantitatively equivalent information, e.g., in terms of gains, losses, or change, are perceived differently by people under various conditions (e.g., stress, time-constraints, information-availability) and have a direct impact on design decision outcomes (Shealy *et al*., 2016). This means that the way decision options are framed and the conditions under which decisions are made, including the process of bringing together information to help decide, and the individuals involved therein, can impact decision-making behaviour and decisions as outcomes. Behavioural decision theory provides a holistic and contextualised approach to such a process (McFall, 2015b) which applies to deciding about architectural sustainability (Volker, 2010); this approach is therefore examined more closely in the remainder of this chapter.

2.4 Values-and-frames' relationships in decision-making

Having established the relevance of values and of frames separately to decision-making about sustainability, literatures were examined for any insights on values-and-frames together as relevant to sustainability, and decision-making favouring it. Literatures across multiple disciplines were searched for any approaches which combine values and frames in decision-making related to sustainability. Links were sought between *any* identified values, frames, decision-making, and project sustainability outcomes. Whilst some literature connects some of these key factors, Table 16 below shows that none study all of them together, thus confirming the knowledge gap. This provided context for the research design and field entry.

Table 16 Current approaches to values + frames in sustainability decision-making

Field, Category, or Discipline	Approach	Variables considered	Authors
Management	Managerial framing of sustainability transitions	F, S (DM)	Lahtinen & Yrjölä, 2019
	Design thinking approach for sustainability innovations	S, D	Buhl *et al*., 2018
Architecture, Management	Sustainability's individually-contestable meaning	F, S	Lankoski, 2016; Schroeder, 2018
Design of built environment	Worldview approach to designing and deciding about regenerative sustainability (recognising values' potential role)	DM, S, ((V)), ((D))	Hes & Duplessis, 2015
Design Management	Design management approach to sustainable building processes	D, S, CON	Rekola *et al*., 2014
	Values and value in design for AEC projects	D, V, CON (F)	Mills, 2013
Construction, Management	Personal values and sustainability decisions in multi-organisation construction projects	V, S, ((DM)), CON	Rickaby *et al*., 2017; 2020
	Linking individual and organisational values for achieving organisations' goals sustainably	V, S, (DM), CON	Zhang *et al*., 2006; 2008
Construction economics	Transaction costs approach to developers' uncertainty about energy efficiency	S, DM, CON	Qian *et al*., 2012
Regional studies	Learning to manage values, frames, and governance in sustainability appraisal	V, F, S, ((DM))	Bond *et al*., 2010
Sustainable development	Collective or shared values in evaluating socially-beneficial actions like sustainability	V, ((F)), (DM)	Harder & Burford, 2018
	Applying design science to broaden sustainability option spaces	S, D, DM	Frye-Levine, 2012
Sustainable development; decision-support	Integrated sustainability decision-support framework (recognising stakeholder engagement, problem-framing and problem setting)	(F), S, DM	Azapagic & Perdan 2005
Stakeholder engagement	Stakeholder engagement to define strategic advantage for sustainable construction	((F)), DM, S, CON	Rodriguez-Melo & Mansouri, 2011
	How to create a space for stakeholders' involvement in construction	(F), DM, CON	Storvang & Clarke, 2014
Linguistics politics	Framing political issues based on voter's values	V, F, (DM)	Lakoff, 2010, 2014
Public affairs	Values & frames in public affairs' socially-beneficial actions	V, F, (S) (DM)	Holmes *et al*., 2011
Public health	Applying frame analysis, reframing, and transition theory to break impasses in global health challenges	F, (S), ((DM))	Jerneck & Olsson, 2011
Environmental decision-making; Environmental management	Systemic approach to decision-making for a sustainable environment	S, DM	Maser, 2012
	Alternative rationalities in sustainability decision-making including values-based rationalities	S, DM, (V)	Bolis *et al*., 2017
	Incorporating values into sustainability decision-making	V, S, DM	Martin, 2015
	Managing stakeholder knowledge for decision-making on complex socio-ecological systems	(V), DM, S	Elsawah *et al*., 2015
Pro-environmental Behaviour	Stakeholder sustainability choice-space (limits & thresholds)	S, DM	Potschin & Haines-Young, 2008
LEGEND	*(N) = Singly bracketed items show related but not specific research.* *((N)) = Doubly bracketed items show loosely related but not specific research.* *V = Values. F = Frames. DM = Decision-making/decisions/choice. S = Sustainability/Sustainable Development. CON = Construction. D = Design*		

(Continued below)

Table 16 (cont.) Current approaches to values + frames in sustainability decision-making

Field, Category, or Discipline	Approach	Variables considered	Authors
Behavioural decision theory	Judgement and bias in decision-making about climate change	S, DM	Marx & Weber, 2012
Behavioural decision-making in engineering design	Framing effects in sustainability rating systems	D, F, S (DM)	Shealy & Klotz, 2016
	Choice architecture approach to whole-systems engineering design	D, F, S (DM)	Harris *et al*., 2017
	Behavioural decision-making approaches to engineering design for sustainability	D, (F), S DM	Klotz *et al*., 2018
	Human-induced barriers, incentives, and performance in sustainable UK domestic retrofit construction	S, (DM), CON	Dowson *et al*., 2012
LEGEND	*(N) = Singly bracketed items show related but not specific research.* *((N)) = Doubly bracketed items show loosely related but not specific research.* *V = Values. F = Frames. DM = Decision-making/decisions/choice. S = Sustainability/Sustainable Development. CON = Construction. D = Design*		

2.4.1 Approaches to decision-making and choice behaviour

The fundamental role of decision-making as an everyday process in human behaviour has generated a rich but complex and overlapping knowledge landscape with frequently unclear boundaries (McFall, 2015b). Whilst numerous perspectives, approaches, models, and methods exist (see Table 17), the need here was to focus on understanding concepts and features relevant to individual and interindividual decision-making perspectives—especially any overlaps—because they may portray actual project decision-making more accurately. Thus, the focus was less on decision-making models or methods, and more on understanding how people actually make decisions and the influences therein to later understand data patterns in specific instances towards broader principles found in an inductive manner. The focus must also include key concepts addressing values and frames separately or together as relevant to sustainability decision-making as it happens in real-world practice.

Table 17 Decision-making approaches and models relevant to understanding actual decision-making

PERSPECTIVE, *THEORY*, Model	**Description**	**Authors**
COGNITIVE-RATIONAL	Rational decision-making approaches typically based on more naturalist-positivist epistemologies (e.g. expected utility; rational choice theory, bounded rationality, prospect theory) where idealised and perfectly rational individuals make optimal decisions to maximise benefits and minimise costs given the available information and prevailing constraints (Just, 2014; Martin, 2015; Shealy *et al*., 2016)	(Simon, 1957; Simon, 1979; Stigler and Becker, 1977; Just, 2014; Martin, 2015)
RATIONAL CHOICE THEORY	"Patterns of behavior develop… that reflect individuals' choices as they maximize benefits and minimize costs" (Martin, 2015:147) and associated preference orderings that obey the axioms of rationality (Wilkinson and Klaes, 2012).	(Simon, 1957; Mortazavi, 2004; Just, 2014)
Bounded rationality models (e.g., satisficing)	"Individuals search for alternatives and evaluate them sequentially until *satisficed*" (Simon, 1979; in McFall, 2015:48) as the condition of trade-off of compromise between satisfaction and sacrifice, whereby idealised and perfectly rational individuals make optimal decisions to maximise benefits and minimise costs given the available information and prevailing constraints (Just, 2014).	(Simon, 1979; Kahneman, 2003)
Normative models	*How people ideally make decisions*, e.g., on ideals and norms, "i.e., how ideal people should make decisions, based on logic and reason that people often cannot understand; e.g. expected utility theory)" and rational choice (McFall, 2015).	(Barclay *et al*., 1971; Fishburn, 1988; Martin, 2015)
Prescriptive models	*How decision-making should/could happen* (McFall, 2015). Prescriptive models provide typically rationalist rules-based guidelines to decision-making, which imply individuals must identify the most appropriate model before use, and apply it rigorously and persistently (Martin, 2015)—a time-consuming and unlikely prospect for many small- and medium-sized projects. Prescriptive models can also involve behavioural decision-making, outlined below.	(Martin, 2015 2020; Yoon and Hwang, 1995)
Descriptive models	*How decision-making* ***really happens***, e.g., Prospect Theory, where models attempt to describe the actual actions and processes involved in people's real-world decision-making, "e.g., value-focused thinking" (Bell, Raiffa, & Tversky, 1988; McFall, 2015).	(Keeney, 1988; Marx and Weber, 2012; Kahneman and Tversky, 2000)
Logic models (or strategic models)	Variously considered as rational logic-based decision-making after Simon (*ibid*, 1978, 1979) or strategic decision-making in which "a strategic plan is developed by working backward from the general goal to more specific outcomes and then to the activities necessary to produce those outcomes" (Brest and Krieger, 2010:59)	(Simon, 1979; Brest and Krieger, 2010)
Probability models	Rational decision-making models typically described mathematically by a "function in which the value of a future gain should be directly proportional to the chance of getting it" following classical conceptions by Pascal and Fermat circa 1654 (McFall, 2015:47).	(Ramsey, 1926; Von Neumann and Morgenstern, 1944)
Cognitive heuristic models	Heuristics are "processes that ignore information and enable fast decisions" (Gigerenzer, 2011:26) where "the decider is not fully aware of the internal processing that occurs under low effort, heuristic, or 'reflexive' conditions" (Edwards, 1992; in McFall, 2015:47). Heuristic models can also be behavioural, see below.	(Gigerenzer and Todd, 1999; Gigerenzer *et al*., 2011)
Cognitive process models	Cognitive processes are internal mental activities and representations of internal biological and physiological processes, and its decision-focused analysts are typically concerned with the causal role of mental events on behaviour, studied variously by cognitive or behavioural schools (McFall, 2015). Process models are incomplete without considering the outcomes but do sometimes extend to include them, thus increasing their predictive power (Glöckner & Betsch, 2011).	(Glöckner and Betsch, 2011)

(Continued below)

Table 17 (cont.) Decision-making approaches and models

PERSPECTIVE, *THEORY*, Model	**Description**	**Authors**
Cognitive outcome models	Conversely, outcome-based models are typically concerned with the outcomes of judgement and decision behaviour but downplay or overlook the cognitive processes used to reach the decisions and are thus incomplete (*ibid*., 2011; 2015).	(Glöckner and Betsch, 2011)
NATURALISTIC, BEHAVIOURAL, or BEHAVIOURAL-SOCIAL	Naturalistic and behavioural approaches concern real-world decision-making (e.g., Klein, 2008) and choice behaviour under various conditions which are either manipulated (e.g., Shealy, 2016) or observed naturally (e.g. McFall, 2015; Strough *et al*., 2011). Such approaches are typically contextually interpretivist, and predominantly process- and behaviour-based (McFall, 2015).	(Lipshitz *et al*., 2001; Klein, 2008) (Marx and Weber, 2012; Johnson *et al*., 2012)
SOCIAL CHOICE THEORY (Mathematical versions)	To account for multiple decision-makers, Social Choice Theory aggregates individual's decision inputs into a collective model, but problematically normally does not consider debates on the content of those inputs (Dryzek and List, 2003) and is therefore limited. Strictly speaking this predominantly mathematical version is a cognitive-rational model, but moves beyond that category by shifting from the individual to account for multiple individuals.	(Dryzek and List, 2003; List, 2013)
BEHAVIOURAL CHOICE THEORY	*Behavioural choices* are considered the "formulation of alternative courses of action" (Ravlin and Meglino, 1987:667), where individuals interpret issues in terms of their subjective payoff in choosing ones behaviour (Sagiv *et al*., 2011). For instance, in a values-based theory of behavioural choice, values "influence the selection and interpretation of external stimuli, thereby affecting the organisation of behavioral choices" (*ibid*., 1987), where individuals' interpretations of issues are dependent on their values (*ibid*, 2011). Sometimes confused with *behavioural models of choice* such as those studied in behavioural decision-making (e.g. Marx and Weber, 2012; Johnson *et al*., 2012).	(Ravlin and Meglino, 1987; Marx and Weber, 2012; Johnson *et al*., 2012)
Motivational models	Behavioural models of decision-making that focus on "abilities and skills that correspond to deliberative, experiential, and affective decisionmaking processes" (Strough *et al*., 2011) whose authors call for more focus on process-based models, which can be further extended by considering both process and outcome (McFall, 2015).	(Strough *et al*., 2011)
	Values-based motivational models of decision-making consider human values as dominant and relatively stable influencers of decisions (Sagiv *et al*., 2011) which when primed, e.g. via frames, can be useful predictors of decision-making behaviour (Ravlin and Meglino, 1987; Sagiv *et al*., 2011).	(Ravlin and Meglino, 1987; Sagiv *et al*., 2011)
Behavioural heuristic models	Intuitive heuristics (mental rules-of-thumb or shortcuts) that "reflect the way that the human mind works rather than on standard statistical software programs, which many professionals such as medical and legal decision-makers find obscure" (Gigerenzer, 2011:29). More progressive models consider not only the behavioural outcome, but also the cognitive process (Gigerenzer, 2011; McFall, 2015)	(Gigerenzer *et al*., 2011)
Dual-process models	Deliberate analytical *and* reactive intuitive cognitive processes involved in decision-making and choice. "The fast, automatic, intuitive, heuristic-based, **Type I system** provides the default behavioral response, which may or may not be modified by Type II, the slow, effortful, deliberative, controlled system" (Evans, 2011; in McFall, 2015:52).	{Evans, 2011; Kahneman, 2003; Kahneman, 2013}
Memory models *(continued below)*	Fuzzy-trace extends dual-process theories positing how "both 'verbatim' and 'gist' memory representations are encoded from the environment, with people often relying most heavily on the gist representations (Reyna, 2004; Reyna & Brainerd,1995). [It] highlights the tendency for retrieval cues in a risky situation to access morality, values, and ethical principles. Often, fuzzy processing leads to intuitive behavior that is more adaptive" (McFall, 2015:53).	(Reyna, 2004; Reyna and Brainerd, 1995)

(Continued below)

Table 17 (cont.) Decision-making approaches and models

PERSPECTIVE, *THEORY*, Model	**Description**	**Authors**
Memory models *(continued from above)*	Query Theory posits that the order and content of the presentation of options (i.e., framing) directly influences the way decision makers balance the evidence and decide (Johnson *et al*., 2007; Shealy, 2015). In essence, decisions and choices are made through sequential cognitive queries and evaluations of options referenced by the starting point (*ibid*, 2007). Initial queries and evaluations "produce longer, richer responses than later questions and, subsequently, this impacts the outcome" (Weber, 2007; in Shealy, 2015:3).	(Johnson *et al*., 2007; Weber *et al*., 2007)
Contextual models	Contextual decision-making models, such as Krantz and Kunreuther's (2007) theory of Context-Dependent Constructed Choice (CDCC), hold that the process and outcome of decision-making is formed by the cues and clues gleaned from nested levels of context from immediate to cultural (*ibid*., 2007; McFall, 2015).	(Tversky and Simonson, 1993; Krantz and Kunreuther, 2007)
	In Constructed Choice Theory, "people's preferences are not stable, but rather constructed with the decision context (Slovic, 1995; Lichtenstein and Slovic, 2006; in Marx and Weber, 2012:24). Moreover, in CDCC, a decision-maker's "[c]ontext influences which goals are active, which resources are available to achieve goals, and which decision rules are considered" and importantly "facilitates consideration of multiple types of goals, including emotional, social, environmental and economic, as well as temporal-sequence goals (Loewenstein and Prelec 1993)" (*ibid*., 2012:25).	(Lichtenstein and Slovic, 2006; Camerer *et al*., 2011; Loewenstein and Prelec, 1993; Marx and Weber, 2012)
Learning/ Developmental	Behavioural developmental stages "interact with one's valuation of consequences in a decision-making situation (Commons & Pekker, 2008; Commons *et al*., 1998). Their Model of Hierarchical Complexity posits that situation difficulty can be organized by orders of hierarchical complexity. A decision-maker who operates at a lower stage of hierarchical complexity within a domain (e.g., 'abstract') than demanded by the situation or task complexity (e.g., 'formal') will apply a less effective strategy in that situation" (Commons & Tuladhar, 2014; in McFall, 2015: 53).	(Commons and Pekker, 2008; Commons and Tuladhar, 2014).
Problem-solving process models	Numerous treatments, particularly in design research, treat decision-making, and design itself, as a problem-solving process in which a current state and desired states are problematised through framing and reframing problem-solution pairs through e.g., cycles of inductive-deductive-abductive thinking.	(Maher *et al*., 1996; Dorst and Dijkhuis, 1995; Dorst and Cross, 2001)
INTEGRAL, CONVERGENT, or PLURALISTIC	Integral approaches typically based on pluralistic epistemologies converge two or more single approaches to form a unified or integrated approach, e.g., process and outcome (McFall, 2015), whereby "the empirical content of a [decision-making] theory increases with the number of (non-equivalent) dependent variables, on which it makes falsifiable predictions" (Glöckner & Betsch, 2011:714). McFall (2015) argues that integrative models are capable of handling considerations of decision-making process *and* outcome—alongside their implied reliance on content.	(McFall, 2015b; Klotz *et al*., 2018)
SOCIAL CHOICE THEORY (Integrative version) *(continued below)*	Social choice theory (SCT) began as mathematical models of aggregate decision inputs from multiple individuals typically considered as "self-interested utility maximizers" (Dryzek & List, 2003:3). Dryzek & List (2003) argue that "its concern is not so much the empirical question of how groups actually do make decisions, rather the normative and logical questions of how they should, and could, aggregate information about the views, interests or preferences of individuals into group decisions" (2003:2-3).	(Dryzek and List, 2003)

(Continued below)

Table 17 (cont.) Decision-making approaches and models

PERSPECTIVE, *THEORY*, Model	**Description**	**Authors**
SOCIAL CHOICE THEORY (Integrative version) *(continued from above)*	Dryzek & List (2003) reconciled and integrated SCT with deliberative democracy, arguing that where the normative aspect of SCT is the "specification of minimal conditions an acceptable aggregation mechanism must satisfy", deliberation is necessary to seek agreement on such conditions, e.g., values matter.	(Dryzek and List, 2003)
Integral Prescriptive	In a furtively integral conception, daSilva *et al*. (2020) suggest a broader, convergent view of "prescriptive decision analysis where both ramifications—rationalist and behavioral—are blended to encapsulate both psychological and political sources of behavioral bias and distortion" (daSilva *et al*., 2020).	(daSilva *et al*., 2020)
Motivational-Contextual (integral)	Strough *et al*.'s (2011) motivational model owes its explanatory power and is contingent upon the context in which the decision-making process itself "consists of motivational factors mediating the developing person's decision-making process, which leads to biased or unbiased decisions" (Strough *et al*., 2011; in McFall, 2015:53).	(McFall, 2015b; Strough *et al*., 2011)
Behavioural process and outcome models	Whilst "process theories therefore *per se* yield potentially higher empirical content than outcome theories" (Glöckner & Betsch, 2011:714) McFall argues that integrative models are capable of handling considerations of decision-making *process* and *outcome* alongside their implied reliance on *content*, thus potentially maximally increasing its empirical content whilst managing potential over-specificity (McFall, 2015b, McFall, 2015a) e.g. through abstraction to categories and themes from diverse data sources.	(Glöckner and Betsch, 2011; McFall, 2015b; McFall, 2015a)
Values-and-Frames	Holmes *et al*. (2011) developed Lakoff's (2010) preliminary theoretical ideas that mindfulness of decision-makers' values when framing issues like healthcare and war can help prime thoughts and motivations favouring the issue framing, e.g., nature as fragile life necessity or ecosystem services rather than exploitable resource. However, both lacked empirical evidence and were based on theoretically converging concepts from other empirical studies. Hence, there is a need for new research to determine values and frames interactions and joint effects on decisions.	(Holmes *et al*., 2011; Lakoff, 2010; Lakoff, 2014)

Peterson (2017) identifies three largely distinct (Martin, 2015) domains in decision theory. *Individual decision-making theories* typically concern functions, causes, and purpose of individuals' decisions, variously considering cognitive or behavioural aspects (McFall, 2015), e.g., at micro-levels, rather than interpersonal interactions, e.g., at meso-levels. Whereas *interindividual game theories* typically consider mathematical models of decision-makers' strategic interactions (e.g. Uşar *et al*., 2019; Hammond *et al*., 2019). Although *Game Theory* seemingly addresses inter-individual interactions, it is mainly a quantitative approach to e.g., give/get decision-making modelling rather than to qualitatively understanding contextually-situated decision practices. *Social choice theory* concerns collective decision-making by aggregating individual inputs into collective outputs (List,

2013) at a level of processes, procedures, and systems, but at the expense of understanding individually-meaningful perspectives and any deliberation of the inputs' content (Dryzek and List, 2003). These three traditionally fell on a spectrum from positivist to interpretivist; however, more recent developments have seen the boundaries blurring considerably, with overlaps and some convergence. Each domain provides promising features for project sustainability decision-making, but none clearly address how people actually make decisions *and* handle contributions from multiple parties like stakeholders and project team members. This suggests an approach to bridge the individual-interpersonal, micro-meso levels could be useful for understanding project sustainability decision-making.

Within and across these domains, three main perspectives concern the earlier *cognitive-rational* (e.g. Simon, 1979; Eisenfuhr *et al*., 2010), later *behavioural-social* (e.g. Marx and Weber, 2012; Takemura, 2014) including *naturalistic decision-making* (Lipshitz *et al*., 2001), and recent *integrative perspectives* (McFall, 2015b; daSilva *et al*., 2020), again with increasingly blurred boundaries. Therein, '*decision*' is diversely examined on a spectrum from individual, binary decisions, to multiple criteria decisions, and multiple-criteria multiple-option choices. '*Decision-making*' is variously examined as the act, process, inputs, interactions, and/or outcomes of deciding/choosing.

Cognitive-rational decision-making perspectives are typically positivist and considered the classical view concerning the thinking of a rational person deciding, comprised of three predominant, competing approaches: logic, probability, heuristic models (McFall, 2015:46) (see Table 17). Some drawbacks are discussed below, §2.4.4-2.5.4. They variously employ three main, cognitive decision analysis techniques: normative, descriptive, prescriptive (Bell *et al*., 1988 1988; Keller, 1989), and associated theoretical models. Such perspectives are predominantly

concerned with the functions, causes and purpose of decision-making, but frequently overlook actual choice behaviour and its relation to outcomes (McFall, 2015).

Behavioural-social perspectives are typically interpretivist, frequently constructionist, and predominantly process- and behaviour-based (McFall, 2015). Research in three main perspectives of psychological, behavioural, and socio-political (Marx and Weber, 2012; daSilva *et al*., 2020) typically employs a similar but expanded set of behavioural decision analysis techniques (*ibid*., 2012; 2020) including separate and unified methods to examine specific factors related to the subject of interest. One behavioural model is of values-based decision-making. It examines the relation and impact on decision-making of human values as individual representations of social-psychological constructs, incorporating multiple, values-based perspectives into interpersonal decision-making (Hall and Davis, 2007). Individuals' values priorities typically provide reference guidelines in making behavioural choices (Ravlin and Meglino, 1987). In crises or novel circumstances constraining ones' cognitive resources, "the set of alternative solutions developed may be greatly affected by the personal values and the perspective those values precipitate" (*ibid*., 2007:1588). This means that values and decision-making, whether about appropriate behaviours or favourable design concepts—implying decisionmaking-as-behaviour—are inextricably linked and likely impacting project sustainability outcomes. However, this and similar research (e.g. Fritzsche, 1995) overlooks the role of framing and communicating values in decision-making processes associated with behaviour over time. This would suggest that an effective programme of research would adopt an approach capable of recognising—and perhaps converging—the individual and interindividual behavioural and interpersonal aspects of project decision-making. It may then be possible to overcome the typical problems of values-based models and prescriptive approaches not framed in the common language of contemporary AEC practice (e.g. McDonald and Gandz, 1991).

Behavioural decision theory typically describes the constituents and effects of peoples' conduct and responses underpinning their actual choice behaviour (McFall, 2015) then compared against more normative theories (Takemura, 2014). As opposed to the previous normative-to-descriptive sequence of studies, research increasingly combines aspects of both (e.g. Camerer *et al*. (2011) in Takemura (2014)). Of the prevailing and frequently overlapping behavioural approaches identified—motivational, contextual, processual, and emergent—emergent studies have begun to examine similarities and overlaps (McFall, 2015; Takemura, 2014). Problematically, "neither [decision] behaviorists nor cognitivists truly care about behavior and outcomes; they care about functions, causes, and purpose of [decision] behavior" (Carr, 1993; in McFall, 2015:46). This could explain why sustainability decision-making is confounded by complex realities with limited real-world supporters.

Whilst established decision theory can help inform understanding of decision-making theoretically, it may be impenetrable in routine decision-making without more accessible or pragmatic methods or techniques for application more approachably in projects. Hence, McFall (2015) identifies three core facets required to understand such real-world decision-making: "observed behavioural elements" (accounting for individual actions and interindividual/social interactions); behaviour "in the developing organism" (accounting for learning in context and decision-making over time); and "underlying decision-making processes that may facilitate such behavior" (2015:46) (accounting for e.g., steps, influences, and changes longitudinally). Whilst seemingly daunting, McFall confirms this is possible through more plural, convergent or integrative approaches (McFall, 2015) as discussed below.

2.4.2 Decision-making approaches applicable to project sustainability

Integrative perspectives are typically pragmatic pluralist, and the most relevant in this context are convergent or composite approaches to bridge the individual and social facets of real-world decision and choice behaviour. More specifically, design and construction are frequently studied as problem-solving (Bowen *et al*., 2016) and variously through the lens of problem-framing/reframing (Dorst, 2015), the interactions of problem-framing and problem-solving (Dzbor and Zdrahal, 2002), or Design Thinking approaches (Buhl *et al*., 2019) to e.g., problem-solution co-evolution (Dorst and Cross, 2001). But many such approaches only consider designers perspectives (Paton and Dorst, 2011) with few studies incorporating multiple individual's perspectives (Hey *et al*., 2007). The most important, relevant approaches are examined below.

One integrative approach useful in understanding project sustainability decision-making is a motivational model accounting for context (Strough *et al*., 2011). This involves centralising the significance of people's "affective, experiential, and deliberative internal processes, nested within an immediate, then cultural context, on the decision-making process. The process, itself, consists of motivational factors mediating the developing person's decision-making process, which leads to biased or unbiased decisions" (McFall, 2015:53). One such motivational factor is human values, a normative motivational dimension of decision-making behaviour, whether individual or shared. In BD&C contexts, it is highly likely that mediating factors include values and/or the frames used to communicate values, decision-problems and criteria, and consequent decisions made, however this remains under-researched.

One cluster of research examined such framing in communication, a social/interactive dimension of decision-making behaviour, and an underlying process potentially facilitating decision-makers' behaviour (Shealy *et al*., 2016),

which is frequently overlooked in the classical approaches. McFall (2015) argues that both the observed behavioural elements and the developmental aspects of decision-making over time are important for understanding real-world decision-making. Calls from within (Klotz *et al*., 2018) and beyond AEC (Weber, 2017; Johnson *et al*., 2012) demonstrate that borrowing from behavioural decision theory provides better understanding of how communication factors like framing as behaviours and values as motivators both influence and encapsulate decisions (and demonstrate learning, which could be useful to adapting actions contextually). Whereas *deliberative social choice* methodologically and epistemologically allows for choices by socially-situated individuals (Dryzek and List, 2003), but at a higher level-of-analysis associated with deliberative democracy, potentially overlooking interpersonal interactions and their overlaps with individual deliberations. Examining the overlapping process and results of motivational, contextual decision-making and communication factors during (interpersonal/interactive) project decision-making may thus provide a more holistic route to improvements which is missing from most research.

Combining approaches (suggested by Klotz (2018) and McFall (2015)) to human values, communication/framing and choice behaviour, as explained below, may be better able to overcome the above limitations and account for contributions from multiple individuals within interpersonal relationships (e.g. professional-client) by converging a normative but subjective values dimension (the motivational aspect) with a social-interactive and intersubjective framing dimension (the communicative aspect) towards communication of sustainability and values and any connection between them through decision-making (the convergent behavioural aspect). Thus, calls for better, more integrated studies of real-world project decision-making from a more behavioural perspective (Klotz *et al*., 2018) imply that examining values-and-frames interactions and effects in decision communication and decision-making process may provide framework for

researching *choice behaviours* in project sustainability decision-making. But it requires further, more nuanced understanding of literature on links between values, frames, and decision-making affecting sustainability.

2.4.3 Values-and-Frames relationships

Holmes *et al*. (2011) highlighted that not only is inter-personal communication rarely value-free, but also that, when combined with the fact that values strongly influence human behaviour, the ethics of values engagement (Crompton, 2013) imply the need to consider whose/which values to endorse or promote (Alsheikh *et al*., 2011), e.g. valuing upfront cost savings (with higher sustainability impacts) over longer-term maintenance costs (and lower sustainability impacts). *Values engagement* can be considered as a process of encouraging some preferred version of values' emergence and discouraging others (*ibid*). But values cannot be revealed in a way for others to recognise when devoid of setting and situatedness (Harder and Burford, 2018). "Frames are both mental structures that order our ideas, and communicative tools that evoke these structures and shape our perceptions and interpretations over time" (Holmes *et.al*., 2011:36). Symbiotically, values might manifest through frames, and frames would contextualise values. The thinking behind this proposition and its role in the research involves the understanding gained from literature about values' and frames' interrelationship, as follows.

When frames allow values to manifest to others, e.g., in problem-solution spaces (Dorst and Cross, 2001; Lockton *et al*., 2013), they assist communication. This is because "the concept of *frame* designates interpretive structures that render events and occurrences subjectively meaningful, and thereby function to organize experience and guide action" (Snow, 2007:1778). When communicating with others, those mental interpretations and meanings manifest in one's speech: "*to frame* is to select some aspects of a perceived reality and make them more salient in a communicating context, in such a way as to promote a particular *problem*

definition, *causal interpretation*, *moral evaluation*, and/or *treatment recommendation* for the item described" (Entman, 1993:52). As discussions develop, *framing* consists of "dynamic and socially situated processes of meaning construction" (Cornelissen and Werner, 2014:183). Various constructs and levels of *framed ideas* and *framing contexts* include choice of language and terminology, frames of reference, mind-sets, and broader perspectives or worldviews at group or cultural levels (*ibid.,* 2014; Dorst, 2015). *Value judgements*, as assessments of value or worth, can be considered a type of frame, delineating or bracketing what is and is not important, thereby reflecting the values of the speaker (cf. Volker, 2010; Mills, 2013); as Myers (2010) suggests, "the label reflects the judgment" (2010:12).

Thus, *frames* as vehicles of thought and communication can be usefully described as the words, phraseology, mannerisms, intonation, etc., that people use to 'label' or characterise, delineate, and then discuss concepts, ideas, goals, or issues with varying levels of meaning and impact for both speaker and listener. Richer frame interpretations (Table 18) can employ a 'thick' form of descriptions (after Ryle, 1971) of both individuals and joint frames. Together with the above literature on values, this understanding led to adopting an approach to frames because they could be useful for sustainability to contextually define, communicate, and work with decision-problems and values. Therefore, for this research, values-and-frames were chosen as a tightly linked, composite concept—a lens to examine the decision-making process, with any related literature examined below.

Table 18 Richer characterisation of frames by level (adapting Ryle's (1971) 'thick' form of description)

Frame level	'Thick' interpretation
Communication frames	Any communication that characterises and emphasises a certain perspective, view, or interpretation over another using language, timing, phraseology, emphasis, intonation, etc., including omission and oversight, involving aspects of the decision problem-framing context pertaining to Entman's (1992) four frame components. Because communication frames are here considered accessible and have effects in decision-making, they are therefore most relevant to this research. Moreover, Löbner (2014) argued that frames are interpretable from human language which makes them accessible both through data capture and analysis, and during active discussions.
Mental or cognitive frames	Any mental system of assumptions and standards that characterise or emphasise a perspective, view, or interpretation that sanctions behaviour and gives it meaning. However, such mental or cognitive frames are here considered both inaccessible and less helpful at the interpersonal level-of-analysis (cf. Snow, 2007; Holmes *et al*., 2011; Cornelissen and Werner, 2014.

2.4.4 Values, frames, and sustainability decision-making

Framing in decision-making presents a decision-problem that identifies and 'brackets' certain premises, options, and/or routes versus others for an issue under consideration (Beresford and Sloper, 2008; Beamish and Biggart, 2010; 2015). *Problem-framing* is a key factor in decision processes, arising from a reciprocal and mutually influential relationship between human values and frames (Bardwell, 1991; Mullenbach, 2007). The way options are framed and the order in which they are presented have significant impacts on decision outcomes (*framing bias*), which can produce results opposite of intentions (Jones *et al*., 2012; Kahneman and Tversky, 2000). Thus, frames and framing are important in AEC decision-making, particularly when examined jointly with values in forming options for presentation and evaluation associated with sustainability choices.

The importance of considering values-and-frames together has been proposed as a way to give support to the underlying values motivating decision-making discussions (Holmes *et al*., 2011)—whilst recognising via frames any relevant unclear and already-known values characterisations like intrinsic, extrinsic, and contributory values (Kelly *et al*., 2014)—as key leverage points in human interpersonal processes involved in self-transcending issues (Darnton and Kirk, 2011), such as the long-term and unseen impacts (Holmes *et al*., 2011; Chilton *et*

al., 2012) of construction. Treating values-and-frames as a compound pair potentially protects vulnerable, frames-only-based outcomes from being overturned (*ibid*., 2011), e.g., via 'raw' information framing (Kollmuss and Agyeman, 2002). Together, values-and-frames can potentially be employed in practice toward sustainability improvements that are less susceptible to variations in behaviour by reinforcing the more consistent, underlying principles or standards from which behaviour (and decision-making-as-behaviour) derives—*human values*. However, despite some research on various combinations (Table 16), empirical studies on values-and-frames *together* are few, where most theorise their relationships without empirical evidence on their interactions and effects separately and together, i.e., values effects on framing/frames, vice versa, and on decision-making, and none in project sustainability contexts. This gap thus informed the research design (see §3).

2.5 Later emergent literature

This section introduces literature and concepts which emerged during primary data and analysis phases, and informed consequent research design refinements at key stages, thus useful to interpret the emergent aspects of this research. As a secondary aim, literature was examined alongside emergent findings as the research evolved and outputs communicated to better understand any potential for improvements (or contributions) by examining the relations between values, frames, decisions and 'routes' of influence between them. This would then inform and guide designing further exploratory and later systematic studies (§3.4.5). Thus, co-evolving needs suggested project decision-making required an understanding of decision formation and influences, followed by decision process structuring and framing, and the combined influence of values-and-frames on decisions. Links were sought between any identified values and project sustainability outcomes, but also for the pathways of influence in various architect-

stakeholder interactions along project development timelines. The main emergent concepts were values influence pathways, meaningful choice, choice-space, and associated convergent approaches to improved sustainability decision-making choice.

2.5.1 Pathways to sustainability decision-making improvements

Literature on sustainability transitions conceptualises '*pathways to sustainability*' as "the particular directions in which interacting social, technological, and environmental systems co-evolve over time" at multiple scales, calling for diverse stakeholder empowerment and participation (Leach *et al*., 2010). Organisational-level stakeholder influence studies conceptualise '*influence pathways*' (Frooman, 1999) as the effects of actors' actions (e.g., using or withholding resources) directly or indirectly (Gargiulo, 1993) on stakeholders' re/actions, e.g., architects offering clients limited sustainability solutions based on past-experience bias (e.g. Bornstein *et al*., 2017). Policy briefing and design conceptualises '*pathways of influence*' by disaggregating and considering not only how contexts and issues create factors that influence stakeholders' views but also the linked pathways between them (Moat *et al*., 2013). Such pathways may be 'relationally' traced through more discretely-identifiable actors, influencing factors (e.g., what said, when, why, etc.), strengths (how influential), directions (e.g., from architect-to-client), and sign (e.g., framed positively/negatively) (Aronson, 1994). Thus, influence pathways may be formed from contexts, issues, and actors involved, to their views of those issues through the specific influence factors actors generate as 'producers' and 'users' (e.g., concerning their institutions, interests, and values) (*ibid*., 2013). Conjointly, several distinct '*influence mechanisms*' were found as key 'connectors' to influence individuals' views in context, including establishing capacity, expectations, imparting trust, creating demand/interest, or complexity (negatively) (*ibid*., 2013). Like the above studies, this implies but again overlooks

both the separate and joint role of communication factors like framing and motivating factors like values. More importantly, applying the influence pathways concept to studies of values-and-frames influences on sustainability decision-making may help to facilitate distinguishing key influencing factors, explored in ES3/§4.4. It may then also be applied to examine improvement pathways by examining these aspects to identify where any room for improvement could be found. Such approaches were therefore adopted in later exploratory and systematic studies to then help provide greater certainty about influence pathways and not just co-presence of factors. Influence pathways were one major 'key emergent factor' arising inductively from analyses of the data (see e.g., §4.3.5.3); literature on others is examined below.

2.5.2 Shaping decision-making processes

A literature with an overlap to the research aim emerged during exploration concerning the '*shaping of choice*' in the behavioural decision-making tradition. Decision-making applicable to sustainability is often distorted by interpersonal and individual cognitive processes, as demonstrated through a well-established but still-growing body of behavioural decision research across multiple domains (Shealy *et al*., 2016; Marx and Weber, 2012). *Classical models* hold that the rational decision-maker will choose and act consistently, dispassionately, based on self-interest (*ibid*., 2016). Such theories assume infinite processing capacity, without time limitations, completely independent of context (Klotz *et al.*, 2018). Yet perfectly rational judgement and decision-making are inherently limited (ibid., 2018; Johnson *et al*., 2012) mainly by cognitive processing capacity, time, and context (Shealy *et al*., 2016; Kahneman, 2003). Acknowledging these underlying limitations, *'bounded' rationality* (e.g., Kahneman and Tversky, 1984) holds that *cognitive biases and heuristics* (mental shortcuts) characteristically shape the desirability and possibility of choices (Klotz *et al.*, 2018). To overcome (or

harness) these limitations to bounded instrumental rationality (Bolis *et al.*, 2017), methods for shaping decision processes involve creating frameworks, and 'spaces' for frameworks—known as '*choice architecture*' (Johnson *et al.*, 2012; Harris *et al.*, 2017; Klotz *et al.*, 2018).

As introduced above, *decision-making* is defined as selecting a course of action among available and potentially competing alternatives (Swami, 2013) by "choosing a particular pathway across the problem-space that lies between the actual and desired states of affairs" (Brest and Krieger, 2010:10-11) (see Figure 9). Defining *decision-problems* creates boundaries around '*problem-space*' that can limit or enhance choices about future project sustainability (Klotz *et al.*, 2018). Such 'space' denotes boundaries within which possible and desirable solutions are formed (Klotz *et al.*, 2018), e.g., via framing (Dorst, 2015). Conceptualising project decision-making for sustainability as structuring and moving through 'problem-space' is a well-established technique for managing decision complexity (Klotz *et al.*, 2018; Shealy *et al.*, 2019) and is helpful here for two reasons. As Bardwell (1991:603) showed, "how one defines a problem determines one's understanding of and approach to that problem; being able to redefine or reframe a problem and to explore the 'problem-space' can help broaden the range of alternatives and solutions examined".

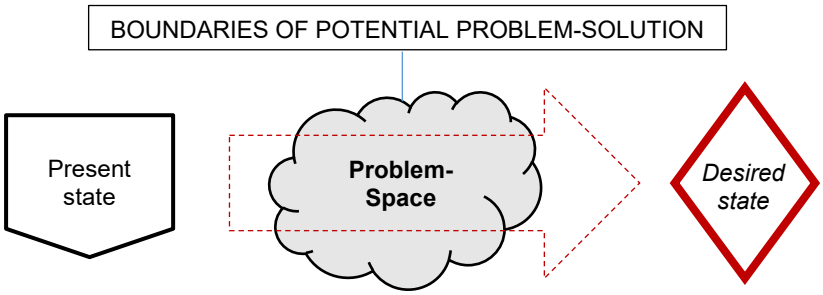


Figure 9 Problem-solving in decision-making, in which one moves from the present through a 'problem-space' to a presupposed 'desired state' in search of a solution (expanding on Brest & Krieger (2010); after Newell & Simon (1972))

To incorporate multiple decision-makers' inputs, the concept of *Sustainability Choice-space* accounts for ranges of problem and outcome acceptability to stakeholders (Potschin and Haines-Young, 2008). Policy design conceptualises

choice-space as a distinctive socio-cognitive 'space' for both 'problem-setters' (e.g., managers/architects/engineers) and decision-makers to collectively "visualise and explore" (*ibid*., 2008:426) 'decision-problems' and solutions for desirable, possible, likely, and acceptable outcomes (see Table 19). Therein, creating more space to view decision-problems from alternative perspectives can account for a wider range of stakeholders (e.g., absent/future) and their motivations (e.g., self-transcending/self-interested) when considering project impacts in decision-making processes (Shealy *et al*., 2016; Klotz *et al*., 2018). Because cognitive limitations and subtle biases create boundaries to meaning in decision problem-setting and processing, they affect the outcomes (*ibid*., 2016; 2018). Locating and managing such 'spaces' (cf. Lahtinen and Yrjölä, 2019) for more individually meaningful choices may be important for sustainability.

Table 19 Key characteristics and features of Sustainability Choice Space (SCS) (after Potschin & Haynes-Young, 2008)

Factor	Description
CORE CHARACTERISTICS	
To visualise and explore outcomes	"[S]ustainability choice space is developed as a way of helping policy advisors visualise and explore what 'room for manoeuvre' they might have in the design of a specific policy. The sustainability choice space can be used to describe the degree to which alternative policy outcomes are acceptable to stakeholders across a range of criteria" (*ibid*., 2008:425).
To consider multiple stakeholders and contexts	"such a choice space must be constructed using information derived from stakeholders to identify the dimensions of sustainability, which are important in the context of a specific policy and the limits and thresholds associated with them" and to visualise how "how changes in these different factors be characterised and ultimately weighed against each other" (*ibid*., 2008:427).
IMPORTANT FEATURES	
Changeable, mutable	[T]he shape of the choice space can change over time. (*ibid*., 2008:437-438)
Realistic	[I]t is generally impossible to identify some 'ideal' or 'final' state. Thus,[…] the corridor defined by [w]hat we perceive [are] limits 'opens up', as the future 'reveals' itself (*ibid*.).
Integrative	[T]he notion of a limit helps us integrate thinking across the three pillars of sustainability in ways not easily achieved by current indicator approaches (*ibid*., 2008:438-439).
Multi-dimensional	"[Sustainability] choice space is multi-dimensional. …Sustainability assessments need to take account of many factors, and these can be expressed in different ways" (*ibid*.).
Adaptive and reflexive	The idea is useful "…as a way of replacing outcome-based planning with more adaptive and reflexive approaches" (*ibid*., 2008:440).
A framework addresses constraints	SCS "provides a framework in which these complex types of judgements can be made. …decisions are based on an understanding of the choices that we have available and the ways they are constrained by economic, social, and environmental factors (*ibid*., 2008:447).
Meets three quality criteria	It considers "(i) normative aspects such as goal orientation, consistency, and flexibility; (ii) systemic aspects such as simplicity, representativeness, parsimony, and sufficiency; and (iii) procedural aspects such as trans-disciplinarity" (Wiek and Binder, 2005:604).

To manage bias-induced boundaries, sustainability and longer-term impacts as abstractions can be translated into more meaningful, tangible project outcomes by construction professionals through better decision problem-framing, by capturing and defining the decision-problem (Bardwell, 1991):

> *"an adequate problem definition is a critical first step to effectively solving complex problems. The process of reframing or redefining a problem enhances one's understanding of that problem. Shifting one's perspective changes '...the conceptual and/or emotional setting or viewpoint in relation to which a situation is experienced and places it in another frame which fits the 'facts' of the same concrete situation equally well or even better, and thereby changes its entire meaning'" (Watzlawick (1974:94) in Bardwell, 1991:606).*

Thus, better problem-definition and re-definition through contextual problem-framing/reframing (Paton and Dorst, 2011) leads to better quality choices (*ibid*., 1991) based on two interconnected factors outlined in Table 20, which begin to suggest opportunities for bringing human values into decision-making via problem-framing, reviewed next.

Table 20 Key problem-solving components as problem-definition and problem-structuring (adapted from Bardwell, 1991)

Factor	Components
Problem-definition	*How one 'sees' or frames a decision-problem.* "The problem definition ramifies throughout the problem-solving process, reflecting values and assumptions, determining strategies, and profoundly impacting upon the quality of solutions: 1. *The problem definition implicitly embodies preconceptions and assumptions that underpin how one approaches the problem.* Viewing the environment as an inheritance to be spent, for example, evokes a different range of attitudes about its treatment than does considering the environment something borrowed from one's children. 2. *The problem definition guides the strategies and actions taken to address the problem.* How something is categorized [i.e., framed] has important consequences for the way it is treated. *Exploration of aspects of the problem influences the quality of solutions* [e.g., professional's expertise, experience, conceptualisations, foresight, efficiencies, etc.]

(Continued below)

Table 20 (cont.) Key problem-solving components as problem-definition and problem-structuring

Factor	Components
Problem-structuring	1. *Organizing the Problem: Building Structure*. Structure relates to how one shapes a problem definition or understanding, i.e., the cognitive map one uses for the problem. 2. *Managing the Process*. To effectively problem-solve, then, one needs some content; familiarity with content is the stuff of which maps are made. One also needs a meaningful coding and organization of that content, i.e., structure. Finally, one needs ways of managing or dealing with and acting on that information [through] strategies for redefining the problem: a. *Staving off solutions*: avoid solving the problem too quickly. b. *Limiting information*: Acknowledging our cognitive limitations means respecting the fact that it is people's attention, not information that is the scarce resource (Simon, 1978). c. *Choosing levels*: an appropriate "universe of discourse". d. Linkage: The linkage among levels provides a context in which one's actions are a part of a larger framework or scheme of things. e. *Personalisation*: Issues that relate to one's own circumstances & needs are difficult to ignore. *Generating imagery*: The ability to manage or effectively organize information comes in part with increased familiarity with an issue. It takes experience, whether actual or conceptual, to establish patterns & a perspective from which to build various levels for looking at a problem".

2.5.3 Choice structuring via framing and frames

Problematically, it is likely that the abstract, contested nature of sustainability (e.g. Lankoski, 2016; Schroeder, 2018) inherently diffuses the available choice-space because sustainability's individual meaningfulness is potentially diluted. Choice-space is further constrained by development controls restricting allowable solutions within policy and statutory boundaries (O'Neill and Gibbs, 2018). Beyond baseline regulation, sustainability can appear to decision-makers as impenetrable abstractions, devoid of context and individual meaningfulness (see §2.3.2). Choice-space constraints also incorporate the cognitive boundaries and biases identified above—potentially overcome by framing not only better decision-problems as above, but also better choice options.

To address these clear challenges, literature suggests that choice-spaces can be 'structured' through better problem-framing (Bardwell, 1991; Shealy, 2016) to support and enhance sustainability's meaningfulness and unlock a broader range of motivations, alternatives, and solutions. By harnessing frame effects to overcome

potential boundaries (*ibid*., 2016) contextual problem-framing practices may create more space to explore and establish sustainability's individual meaningfulness in project decision-making processes. Creatively framing and reframing (Paton and Dorst, 2011) sustainability, e.g., through design, is known to help define and redefine better decision-problems (cf. Bardwell, 1991) by both broadening the problem-space boundaries (Carlgren *et al*., 2016) and appealing to a wider range of motivations to pursue sustainability (cf. Arvai *et al*., 2012; Holmes *et al*., 2011). So, framing renewable energy measures as upfront cost (loss) versus long-term maintenance and energy savings (gain) to decision-makers who prioritise budgets over longevity will motivate decisions based on interpretations of gain/loss relative to starting points and those priorities (cf. Klotz *et al*., 2018; Shealy *et al*., 2019) (e.g., values). Helpfully, through reflection-in-action, professionals are known to reflect on contextual clues and reframe design options accordingly (Schön, 1983; Paton and Dorst, 2011). Both framing and choosing options are context-dependent (cf. Tversky and Simonson, 1993; Krantz and Kunreuther, 2007) which means that features of a decision-making situation (like timescales or planning politics) may be translated into influencing factors, potentially through the frames used to characterise and communicate choice options; hence context matters to outcomes. Altogether, this suggests that sustainability's meaning can be interactively formulated, e.g., through shared meaning-making (Bowen *et al.*, 2016) between architect-client (Hopwood and Edwards, 2017), thereby potentially linking sustainability to decision-maker's values.

2.5.4 Better choice options through values-and-frames links

Taken together, the above research was interpreted as suggesting that linking values to decisions through framing better decision-problems and associated choice options may provide the opportunity to enhance sustainability's individual meaningfulness thus unlocking a broader range of motivations, i.e., for decision-makers themselves towards more individually-meaningful choices. As argued

above, related studies (cf. Stern *et al*., 1998; Steg *et al*., 2014) have shown how, like sustainability, pro-environmental behaviour is motivated by human values—well-established as consistently key underpinning and enduring drivers. Because values are foundational, underlying drivers of motivations, behaviour, and decision-making (Cheng and Fleischmann, 2010; Schwartz, 2012), they are pertinent to sustainability framing for the reasons outlined above (§2.3.3); values are: accessible; influence behaviour, decisions, and thus outcomes; identifiable, relatively stable, and measurable; and have some shared meanings that may allow transferability of findings across contexts. Values encompass aspects of both meaning and practice; because values are context-dependent, they require local calibration (Harder and Burford, 2018). Thus, making use of the concepts of values herein may reveal their underexplored roles in sustainability framing- and decision-making-as-behaviours.

Linking sustainability to human values in decision-making (Martin, 2015) may happen when discussing and translating client's requirements—via framing and frames. As above, using frames in problem-solution spaces may allow values to manifest thus assist communication because frames provide and communicate meaning (Howard-Grenville and Hoffman, 2003; Kaufman *et al*., 2013); and motivate decisions (e.g. Shealy *et al.*, 2016). In particular, *problem-frames* are useful communication tools between two individuals in structuring and setting decision-problems (Bardwell, 1991; Buhl *et al*., 2019) in project decision-making. Whereas *value judgements-as-frames* delineate or bracket relative importance and worthwhileness, thereby reflecting a speaker's values (cf. Volker, 2010; Mills, 2013). Altogether this literature already suggests that values as motivators would influence framing-as-process and frames-as-content (after Benford and Snow, 2000; Lahtinen and Yrjölä, 2019), yet this relationship remains underexplored regarding project sustainability.

The order and content of the presentation of options (i.e., framing) directly influences the way decision makers balance the evidence and decide (Johnson *et al*., 2007; Shealy, 2015). In essence, decisions and choices are made through sequential cognitive queries and evaluations of options referenced by the starting point (*ibid*., 2007). Initial queries and evaluations "produce longer, richer responses than later questions and, subsequently, this impacts the outcome" (Weber, 2007 in Shealy, 2015:3). Since project problem-framing and decision-making may happen over time, and frames and decisions are affected by their ordering (*ibid*., 2007), sequencing clearly matters. Importantly, various literature suggests that values might influence the sequence and decision-outcomes of queries in three ways. Values are likely to be primed and activated by frames (Lakoff, 2010; 2014); values are likely to be communicated to others through conversations in interpersonal settings; and values can influence decisions (Verplanken and Holland, 2002; Sagiv *et al*., 2011). Taken together, the composite, underexplored, yet crucial concept of values-and-frames relationships is thus operationalised herein through values-influence pathways via frames in the decision-making process. This is later operationalised through the concept of improvements to meaningful choices, with its key concepts forming an outline layered framework, Table 21.

Table 21 Summary of key layers and emergent concepts of meaningful choice and opportunities for improvement

Layer or concept	Summary, description, or specification
Project decision-landscape *(Continued below)*	A *project decision-landscape* includes the entire lifespan of the BD&C project and incorporates whole sphere of project decision-making, including "the legal, social, and institutional dimensions of environmental decision-making" (Rehr, 2012:1204), all possible affected stakeholders, relevant decision variables, dimensions, (Potschin, 2008) etc. It bounds the more focused *problem-spaces* and *choice-spaces* nested therein (see below).
	As the scope of a project decision-landscape covers all the stakeholders, decisions, and variables, it may therefore be potentially enormous and unmanageable, given their natures e.g., uncertain, risky, alongside well-known cognitive limitations. Such landscapes are necessarily partitioned into both logical and manageable tranches using industry standard guidelines e.g., RIBA Plan of Work (RIBA, 2013). Therein, problem-framers/decision-makers typically make a biased selection of a narrower range of *decision-problem* dimensions (see Table 15), i.e., via *problem-framing/reframing* (Johnson, 2012; Klotz, 2018) (see below).

(Continued below)

Table 21 (cont.) Summary of key layers and emergent concepts of meaningful choice and opportunities for improvement

Layer or concept	Summary, description, or specification
Project decision-landscape *(Continued from above)*	Thus, the decision-landscape is conceptualised as the *macro-level project-wide context*, set within the wider economic, socio-political, and environmental context (Rehr *et al*., 2012), with *opportunities meaningful choice* limited by potentially inaccessible contextual factors and known cognitive limitations and biases (see §2.3.3, 2.4.4, and 2.5.2). A *project decision-landscape* was ultimately operationalised as a Client-Project Case (see §3.2.5).
Problem-space	*Problem-space* is "the mental space in which the analytical person must encode the 'problem elements—defining goals, rules, and other aspects of the situation ...[that] represents the initial situation presented to [her/]him, the desired goal situation, various intermediate states, imagined or experienced, as well as any concepts [s/]he uses to describe these situations to [her/]himself' (Newell & Simon, 1972:59)" (Fiore and Schooler, 2004:136-137), such as during *problem-framing*.
	Problem-space can be conceptualised as the available socio-cognitive space for various characterisations or framings of the decision-problem to be formed or emerge. Problem-space potentially bounds the available *choice-space* (see below).
	Thus, the scope is considered the *focused-level decision-problem context* and its extents, notionally including project type, phase, affected stakeholders, the decision-problem to be considered, and factors concerning problem-framing/ reframing and decision-making (see below). It is nested within a decision-environment and inherits its characteristics and features, again set within the wider context, with limited opportunities as above. A *problem-space* was ultimately operationalised here as the problem-frame, or set of frames comprising a problem-frame, part of a Unit-of-Analysis potentially stretching over several, and nested within a client-project case) (see §3.2.5).
Problem-framing	*Problem-framing* refers to the way information and choice options are devised or designed, generated, and re/presented both to oneself and others in problem-solving and decision-making processes (Azapagic and Perdan, 2005; Bond *et al*., 2010) (see also §2.3.5, Table 15). *Problem-framing* is similar to *problem-definition* but more focused on the social-communicative aspect of problem-solving (Bardwell, 1991; *ibid*., 2005) (see also Table 15).
Design problem-framing	Following from the definition of design thinking (Table 15), in design, "'*Framing*' is a term commonly used within design literature (since (Schön, 1983)) for the creation of a (novel) standpoint from which a problematic situation can be tackled" (Dorst, 2011:525). This involves "an interplay between *diverging* exploration of problem and solution space, and *converging* processes of synthesizing and selecting. …design treats both the problem and the solution as something to be explored" (Lindberg *et al*., 2011:4).
Design-problem frame	*Design-problem frames* are "complex sets of statements that include the specific perception of a problem situation, the (implicit) adoption of certain concepts to describe the situation, a 'working principle' that underpins a solution and the key thesis: IF we look at the problem situation from this viewpoint, and adopt the working principle associated with that position, THEN we will create the value we are striving for" (Dorst, 2011:525, orig. emphasis).
Choice-space *(Continued below)*	A *choice-space* is conceptualised as an extension of a more focused decision-problem extents; "Once the state [i.e., problem-] space is fixed, the choice set may be defined. …the choice space consists of the original basic acts and the set of *conceivable acts* (that is, all the mappings from the set of states to the set of feasible consequences)" (Karni, 2017:83). Importantly, the *choice-space* concept allows problem-framers the opportunity of "expanding the state space in the wake of growing awareness" (*ibid*.) such as awareness of new problems or frames or values or change.

(Continued below)

Table 21 (cont.) Summary of key layers and emergent concepts of meaningful choice

Layer or concept	Summary Definition, description, or specification
Choice-space *(Continued from above)*	Policy design considers *choice-space* as a distinctive socio-cognitive 'space' for both 'problem-setters' (e.g., managers/architects/engineers) and decision-makers to collectively "visualise and explore" (Potschin, 2008:426) 'decision-problems' and solutions for desirable, possible, likely, and acceptable outcomes (see Table 19 and below).
Sustainability Choice-Space (SCS)	Following from Table 20, *sustainability choice-space* is both created and bounded by the range of available/plausible (Wiek, 2005) and promising options by engaging stakeholders to identify sustainability's important dimensions in a project context "and the limits and thresholds associated with them" (*ibid.*, 2008:427). Accordingly, *problem-space* can be conceptualised as the available socio-cognitive space for various characterisations or framings of the decision-problem to be formed or emerge. It is nested within a wider *decision landscape* and inherits its characteristics and features. The available *sustainability choice-space* is potentially bounded by the stage-setting *problem-space,* inheriting its features. This behoves problem-framers to consider any alternative variations of the *decision-problem* (see also §2.3.5, Table 15) by e.g., employing *design thinking* and *problem-framing*/reframing to inductively, abductively, and creatively consider alternative ways of thinking about it, thus potentially expanding problem-space with new problem-frames and choice options (see also Table 15). Thus, *problem-space* and *choice-space* were operationalised through Units-of-Analysis, potentially stretching over several, nested in a case.
Space for meaningful choice (SpMCh)	*Space for meaningful choice* (SpMCh) is conceptualised as a type of sustainability choice-space to establish sustainability's roots more meaningfully in decision-making by engendering or facilitating an explicit opportunity for some kind of intentionally balanced or holistic consideration of the sustainability of a project and its tri-partite human, economic, and environmental or ecological impacts (cf. Qian *et al*., 2012; Potschin, 2008).
	The quality and characteristics of such *space for meaningful choice* may therefore vary by the extent to which each of these factors are engendered, facilitated, and/or considered in project decision-making processes. One can make and take the *opportunity to create space* for more individually-meaningful choices through problem-framing/reframing, as above.
	Space for meaningful choice might be created within a *project decision environment* by taking opportunity to elicit, recognise, and frame/reframe the problem, potentially providing opportunity to incorporate stakeholder's values.
Opportunities for meaningful choice (OpMCh)	More broadly, *opportunities for meaningful choice* (OpMCh) are conceptualised as any room for improving choices affecting sustainability, conceptualised as the available chances—whether taken or spent—for intentionally balanced or holistic consideration of what sustainability *could* mean to decision-makers in context. "According to Sen (1999), life opportunities should be understood in terms of a broad set of factors that support meaningful choice and the pursuit of the good life" (Howarth, 2007:660). Thus, opportunities might be made by creating more space for individually-meaningful choice, e.g., via values, as above.
	Whilst OpMCh are conceivably numerous during a project lifespan, they can be taken or missed. OpMCh ***increase*** when a problem-framer and/or decision-maker explicitly create the space for meaningful choice, thus taking or maximising the opportunity. Making or missing opportunities would have the greatest impact during earlier-stage project planning and design when wide-scope, broad-reaching decisions are made (NIBS, 2012).
	OpMCh might be ***maximised*** when stakeholders explore contextual values and meaning of sustainability. However, there may be limited opportunities for *meaningful choice* because of e.g., idiosyncrasies in personal communication styles and cognitive limitations such as stereotyping and framing bias (Shealy, 2016; Klotz, 2018). Thus, one may make and take the *opportunity to create space* for more individually-meaningful choices through problem-framing/reframing.

Table 21 (cont.) Summary of key layers and emergent concepts of meaningful choice

Layer or concept	Summary Definition, description, or specification
Meaningful choice (MCh)	Aaker (2014:1) asks, "what brings lasting happiness, namely well-being[?] What, then, cultivates a more lasting sense of well-being? A growing body of research suggests that meaningfulness does, and that the time and money spent on meaningful choices is often associated with more lasting positive consequences". As the core concept, meaningfulness has both "emotional antecedents and behavioral consequences. While meaningful choices are often not pleasurable to make, indeed may come at a cost or involve pain, they are often associated with a larger purpose" (sic, *ibid*.). "[A] choice becomes meaningful when the reason for the choice is to fit important goals (Csikszentmihalyi, 2000)" (*ibid*.).
	Similarly, a *meaningful choice* (MCh) is conceptualised as a conscious consideration of what sustainability means to a decision-maker and equally how such a choice/decision will affect project impacts on issues associated with sustainability and made with respect to both their individual situations *and* broader, long-term goals.
Integration	This research looks at how the decision-problem of sustainability is framed, the relationship of values to such framing, and values and frames relationships to subsequent decision-making, because it was later thought that this may reveal insights about how these factors impact individually-meaningful and potentially more enduring choices about project impacts normally associated with sustainability. These are further integrated below.

2.6 Theoretical and conceptual framework

2.6.1 Theoretical foundation

This research is conducted in the broader context of multi-scale sustainability, considered in terms of well-established theories on planetary thresholds (Rockström *et al*., 2009) and social-ecological system sustainability (Ostrom, 2009). In this context, sustainable development is seen as a broad, organising principle guiding human endeavours towards social, environmental, and economic inter-sustainabilities (Daly, 1990; Brand, 2004). However, sustainability continues to remain a contested concept in business contexts (Connelly, 2007; Lankoski, 2016) including AEC (Schroeder, 2018). In UK built environment projects, sustainability 'baselines' remain any requirements set both nationally and locally via planning regulations/policies (NPPF 2012-2019), and national Building Regulations (O'Neill and Gibbs, 2018).

Focusing on the role of decision-making, the research is underpinned by broader theories of consequential decision-making affecting potentially unseen sustainability outcomes (Haughton and McGranahan, 2006; Adger and Jordan, 2009; Lee, 2006). Adopting more holistic approaches to fundamental decision-making processes *and* influences in design and construction could improve project outcomes toward improved regional and urban sustainabilities (*ibid*., 2006, 2006) to which construction projects and their stakeholders contribute. Because sustainability outcomes are directly affected by decision processes (*ibid*., 2009), constructing and conducting better decision-making processes may therefore influence sustainability outcomes (cf. Bardwell, 1991; Shealy, 2019). Combining 'small everyday' with 'large planned' strategic decisions aiming to incorporate their impacts could shape the broader impacts of architecture and urban sustainability (*ibid*., 2006; 2006), yet these theories continue to drive unresolved questions of how this would happen in practice.

Understanding how more individually-meaningful versions of sustainability can be combined with such multi-level decision-making processes led to considerations of how underpinning human influences drive decision-making behaviour. Contextualising the concepts of human influences driving decision-making requires incorporating accounts of interpersonal decision-making to account for the interactional nature of architectural decision-making (Volker, 2010; Almendra, 2010). Because sustainability and 'green building' are considered socially-constructed concepts (Stenberg, 2006), the work also relies on explanations of not only individual and interpersonal decision-making influences (e.g., Johnson *et al*., 2012; Marx and Weber, 2012), but also understanding individual decision influences, including those variously described by behavioural and descriptive decision theories (*ibid*., 2012; 2012; Martin, 2015). Together these drove questions about how underpinning human influences driving decision-making behaviour would contribute to project sustainability.

Variables in human behaviour such as values (e.g. Cieciuch *et al*., 2015; Schwartz, 2012), intentions, norms, and perceived behavioural control together structure and drive choice and decision-making, as described by more naturalistic, contextual, convergent theories of behavioural decision-making (e.g. Takemura, 2014; Lipshitz *et al*., 2001) described above. Importantly, values and frames as strong underpinning variables drive motivation and effort to perform associated decision-making behaviours (Ajzen and Madden, 1986; Glanz *et al*., 2015). Such variables can govern project decision-making processes—factors which are well-established in behavioural decision research (*ibid*., 2012, 2012) and beginning to emerge in AEC sustainability decision-making (Shealy *et al*., 2019; Klotz *et al*., 2018). These drove questions on how the interrelations and influences of these factors in decision-making transpire and may be improved in practice. The research pathway designed to examine the knowledge gap highlighted by these questions is addressed in Chapter 3, with key concepts compiled below.

2.6.2 Conceptual framework

The core concepts in this research concern sustainability, human values (versus, e.g., financial value), communication frames, decisions and the decision-making process, and, later, decisions-as-choices with variable meaningfulness. The nature of this underexamined, convergent research demanded an exploratory study transitioning into a more structured and then systematic study. Conjointly, as will be explained in Chapter 3, the concepts' nature as both individual and interpersonal constructs and processes benefit from an 'intersubjective relativist' ontology, pragmatic constructionist epistemology (see §3.2.2) together befitting a qualitative exploratory study.

Of all the influences in behaviour and individual differences, human values represent a key driver and antecedent in behaviour and decision-making (e.g. Ravlin and Meglino, 1987; Cheng and Fleischmann, 2010). Values are a relatively stable, have universal aspects, and are a measurable construct encapsulating what is most important, worthwhile, and meaningful in a person's life and goals (e.g. Rokeach, 1973; Schwartz, 1992). Several concepts and their nested interconnections with values, their influence, and activation or suppression (Holmes *et al.*, 2011) are compiled into a pyramid of concepts to show their relationships in this research, Figure 10 below.

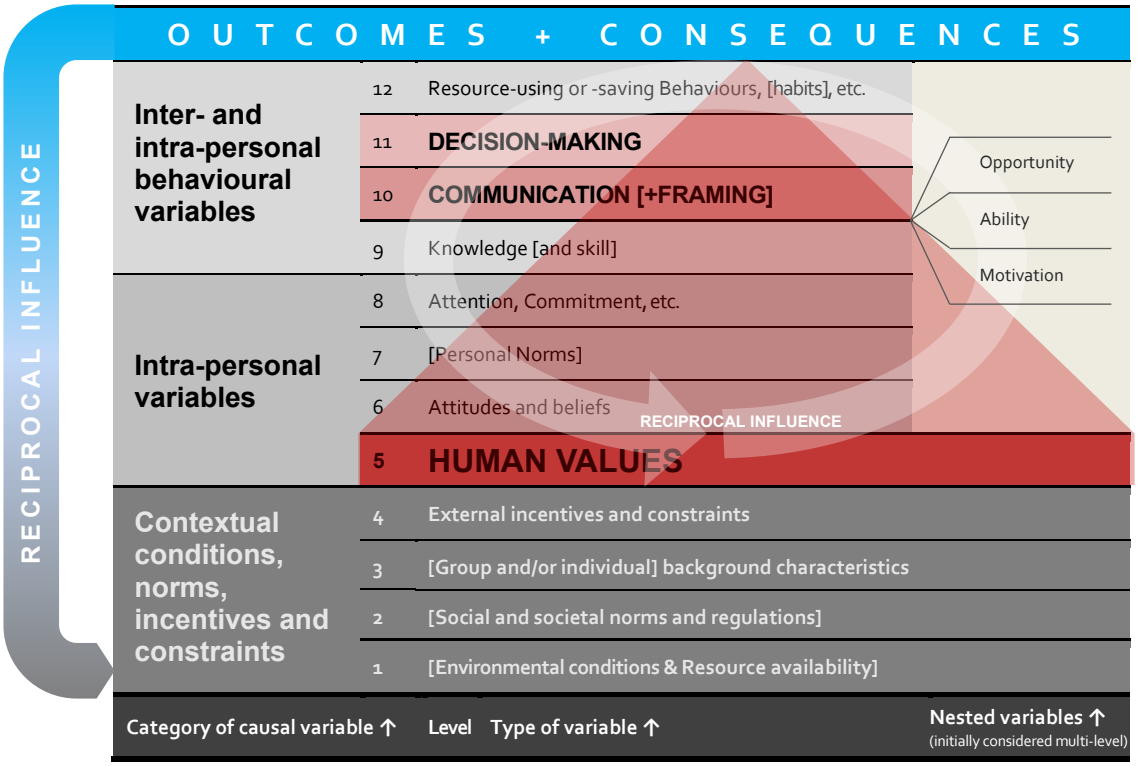


Figure 10 A pyramid of human variables with studied variables in bold, showing human values as a foundational variable, and by extension their influence on inter- and intra-personal behaviour (theorised), set on a foundation of contextual conditions, norms, incentives, and constraints (based on causal ordering suggested by Dietz *et al.*, 1998; and also converging Stern and Oskamp, 1987; Ščasný *et al.*, 2013; Ölander and Thøgersen, 1995; Stern, 2000; Shove, 2010).

These theories and concepts demonstrate not only the complex links and influences driven by values, but also values' importance as a key foundational component in a much larger framework of individual and interpersonal cognitive and behavioural processes, with both values and frames considered as antecedents

of much behaviour. '*Problem-framing*' refers to the way information and choice options are generated and re/presented both to oneself and others in problem-solving and decision-making processes (Azapagic and Perdan, 2005; Bond *et al*., 2010). *Frames* are a critical component in defining design 'problems' which are then potentially debated and 'solved' (Paton and Dorst, 2011). Information considered by individuals in their view to be relevant and important is incorporated within decision-problem frames (a key type of frame) and thereby included in decision-making deliberations; all else may be downgraded in importance or disregarded (*ibid*., 2005; 2011). Key antecedents and precursors here are individual values (Cheng and Fleischmann, 2010). If sustainability issues are not considered worthwhile—and then framed as such—by the people originating proposals or solutions, then they may receive little future opportunity for consideration. This is likely to lock future outcomes into potentially unsustainable pathways and impacts at scales greater than immediate, interpersonal, or mid-term financial. The key concepts have been brought together to form an outline layered framework (Figure 10) where the selected variables (in bold) are explored in this research and further integrated below (with newer, emergent concepts in Table 21).

2.7 Concluding integration

The core research problem is twofold: sustainability is a widely-embraced goal but remains a contested concept, and improvement opportunities are missed in AEC projects. If widespread sustainability is unlikely to occur without conscious choice to pursue it (Qian *et al*., 2012), then choosing a meaningful course of action (deciding) is central. This implies ranking and preference-selection amongst alternatives (Swami, 2013) by evaluating options, and then making choices (cf. Attri and Grover, 2015; Yoon and Hwang, 1995). In this evaluation and

preference-selection, value is attributed and can be (mis)perceived and/or (mis)communicated (Fischhoff *et al*., 1984).

But various literatures report that concrete conceptualisation of sustainability requires localisation through local interpretation and meaning-making before it can take form (e.g., Harder and Burford, 2018). Decision-making is a key pathway to give sustainability form and future, but is constrained by known cognitive limitations and confounded by non-technical barriers. So it is even more crucial to ensure that framing bias does not interfere with the underpinning values manifesting and being communicated. If frames can communicate a selected view of the world, then communicating that chosen view implies that a speaker prefers the view/choice over another competing view/choice. With this choice, sustainability's value can be perceived, attributed, and/or communicated. Accordingly, a positive or negative treatment communicated in a frame, e.g., evaluation, can indicate whether a speaker/stakeholder also prefers, prioritises, and/or values the view as framed. Together this suggests that, symbiotically, values would manifest through frames, and frames would contextualise values. Linking sustainability to 'local' values could establish or enhance its meaning, but values 'vocabularies' and useful techniques are missing from projects. Frames are already used in design and can assist in contextualising and individualising sustainability options, but there is no evidence that this pathway is deployed in architectural practice towards sustainability improvements.

It therefore follows that the interoperation of frames with values (as values-and-frames) during project planning and decision-making is likely to be key to setting, enhancing, and/or limiting meaningfulness. But what remains unclear from existing literature is how values-and-frames interact with each other and in project decision-making contexts, and how that can impact opportunities for meaningful choice about sustainability. No research currently examines these variables in architectural project decision-making contexts or analysis level.

Focusing solely on capturing values without examining the frames (through which they are communicated) would risk missing the meaning communicated. And focusing only on frames risks missing values communication, and important values-decisions motivational links. Neither considering the values alone, nor the frames alone, would be sufficient for these purposes, because frames clearly mediate communication of both one's values and sustainability's meaningfulness in decision processes. Therefore, for this research, values-and-frames were chosen as a tightly linked, composite concept. One was not searched for in the data without the other; the co-evolution of both was followed along the unfolding architect-stakeholder/client discussions. Although this was a challenge for the study, the literature suggests that such an approach may provide a more direct and robust basis for meaningful choices. Making this connection could reinforce the underlying human values from which behaviour derives.

Taken together, these points strongly suggest that, in principle, advances are possible by understanding values-and-frames together as influences in decision-making processes, to then identify opportunities for improvement. The main aim thus became to detect the 'natural' pathways of values influences towards sustainability in such discussions and to gain insights for opportunities to enrich them in future practice. Having synthesised concepts from the existing literature as tools for this research, a striking omission was found from a perspective of building theoretical insights: how values-and-frames interact with and influence each other in project decision-making contexts, how that impacts decisions, and opportunities for meaningful choice about sustainability. It may then be possible to achieve the larger goal of improved project sustainability with potentially reduced impact of built end-products towards closing the loop between everyday or smaller-scale decisions and larger-scale impacts. This represents an important and rich knowledge gap, investigated as described below.

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Chapter 3 Research design and methods

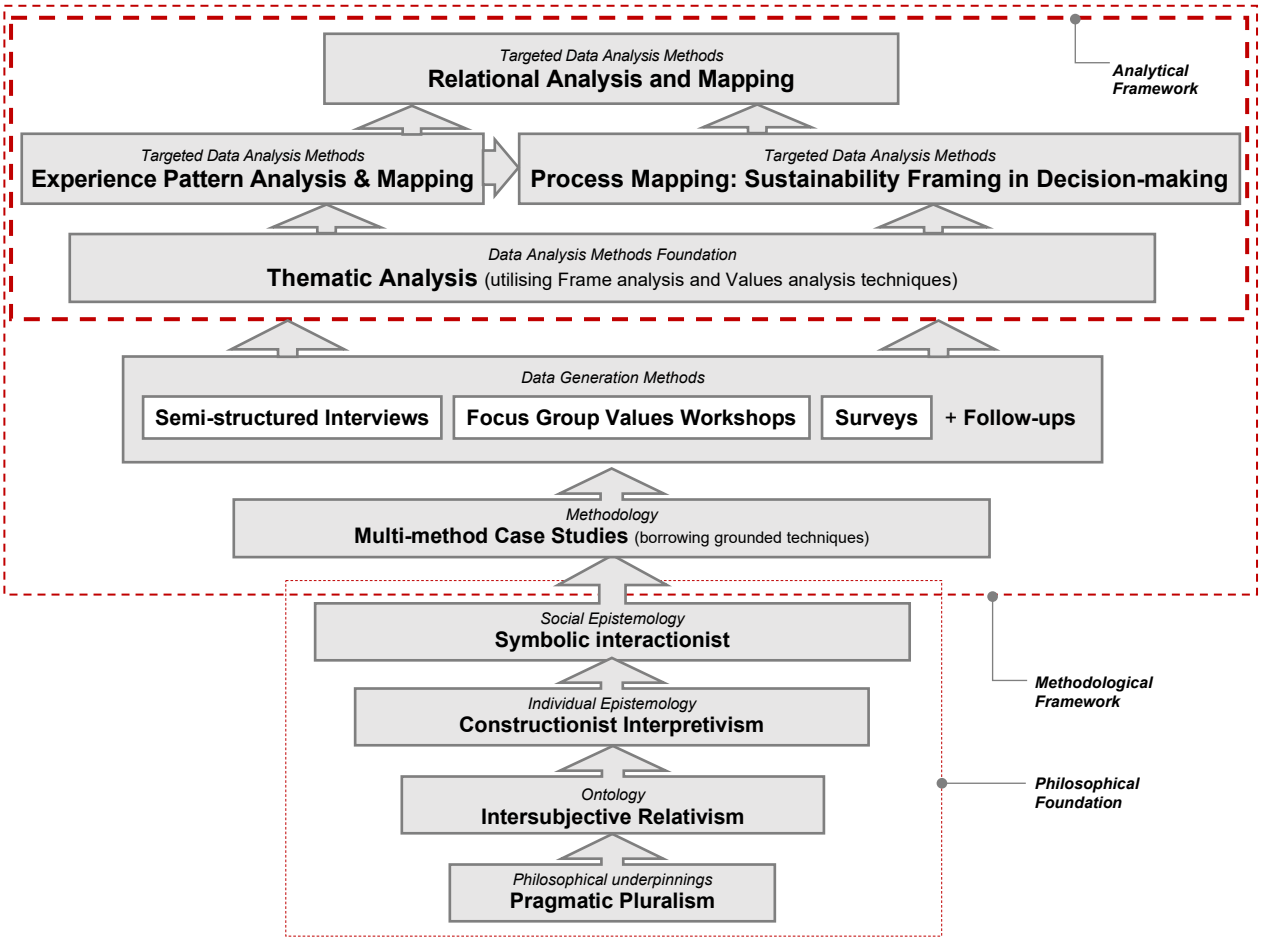
3.1 Chapter introduction

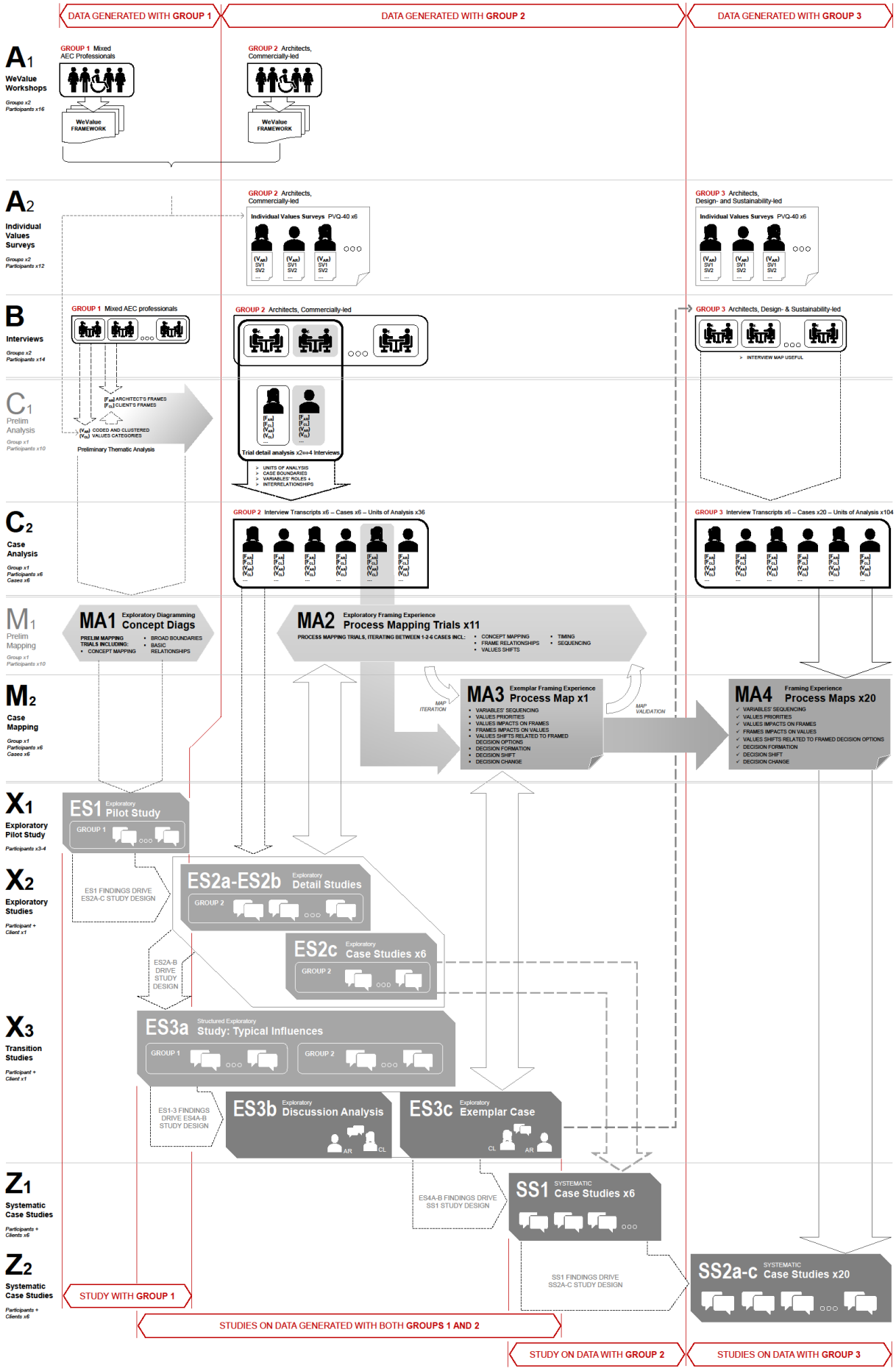
The purpose of this chapter is to establish and explain the research methodology, research design, and connection to research questions; to summarise the research methods, and provide research quality and attainment criteria. This research was undertaken in a nascent area of values and frames in decision-making about sustainability, within the field of architectural design and its management. A pragmatic constructionist epistemological approach is adopted in a Case Study research structure. This is supported by grounded, inductive research tools and layered with relevant and validated analytical techniques of thematic analysis and additional sub-techniques, see Figure 11 below. To visualise the research process, a comprehensive flowchart diagram is shown in Figure 12 below.

In this chapter, the research design preliminaries and components, rationale for their use, and data generation methods are outlined then explained. As direct companions to this chapter, Appendix-3 provides further detailed support for interested parties, with sub-sections cross-referenced accordingly. The methodology and methods build from and respond to the needs identified in the Literature Review, which then inform and guide data analysis and findings of Chapters 4-5. For an extended, detailed examination of the Research Design and Methods, and Analysis Design and Methods, please see Appendices 3.2-3.3. For the ethical procedures and documentation, see Appendix-3.1.

Figure 11 (below) Research Design Pyramid: Complete Epistemological, Methodological & Analytical Framework (format Crotty, 1998)

Figure 12 (below) Research Process Flowchart (in A3 size)


Targeted Data Analysis Methods
Relational Analysis and Mapping
Analytical Framework
Targeted Data Analysis Methods
Experience Pattern Analysis & Mapping
Targeted Data Analysis Methods
Process Mapping: Sustainability Framing in Decision-making
Data Analysis Methods Foundation
Thematic Analysis (utilising Frame analysis and Values analysis techniques)
Data Generation Methods
Semi-structured Interviews
Focus Group Values Workshops
Surveys
+ Follow-ups
Methodology
Multi-method Case Studies (borrowing grounded techniques)
Social Epistemology
Symbolic interactionist
Individual Epistemology
Constructionist Interpretivism
Ontology
Intersubjective Relativism
Philosophical underpinnings
Pragmatic Pluralism
Methodological Framework
Philosophical Foundation


DATA GENERATED WITH GROUP 1
DATA GENERATED WITH GROUP 2
DATA GENERATED WITH GROUP 3
A1 WeValue Workshops
GROUP 1 Mixed AEC Professionals
GROUP 2 Architects, Commercially-led
WeValue FRAMEWORK
A2 Individual Values Surveys
GROUP 2 Architects, Commercially-led
Individual Values Surveys PVQ-40 x6
GROUP 3 Architects, Design- and Sustainability-led
B Interviews
GROUP 1 Mixed AEC professionals
GROUP 2 Architects, Commercially-led
GROUP 3 Architects, Design- & Sustainability-led
INTERVIEW MAP USEFUL
C1 Prelim Analysis
ARCHITECT'S FRAMES
CLIENT'S FRAMES
CODED AND CLUSTERED VALUES CATEGORIES
Preliminary Thematic Analysis
Trial detail analysis x2e+4 Interviews
UNITS OF ANALYSIS
CASE BOUNDARIES
VARIABLES' ROLES + INTERRELATIONSHIPS
C2 Case Analysis
GROUP 2 Interview Transcripts x6 – Cases x6 – Units of Analysis x36
GROUP 3 Interview Transcripts x6 – Cases x20 – Units of Analysis x104
M1 Prelim Mapping
MA1 Exploratory Diagramming Concept Diags
PRELIM MAPPING TRIALS INCLUDING:
CONCEPT MAPPING
BROAD BOUNDARIES
BASIC RELATIONSHIPS
MA2 Exploratory Framing Experience Process Mapping Trials x11
PROCESS MAPPING TRIALS, ITERATING BETWEEN 1-2-6 CASES INCL:
CONCEPT MAPPING
FRAME RELATIONSHIPS
VALUES SHIFTS
TIMING
SEQUENCING
M2 Case Mapping
MAP ITERATION
MA3 Exemplar Framing Experience Process Map x1
VARIABLES' SEQUENCING
VALUES PRIORITIES
VALUES IMPACTS ON FRAMES
FRAMES IMPACTS ON VALUES
VALUES SHIFTS RELATED TO FRAMED DECISION OPTIONS
DECISION FORMATION
DECISION SHIFT
DECISION CHANGE
MAP VALIDATION
MA4 Framing Experience Process Maps x20
VARIABLES' SEQUENCING
VALUES PRIORITIES
VALUES IMPACTS ON FRAMES
FRAMES IMPACTS ON VALUES
VALUES SHIFTS RELATED TO FRAMED DECISION OPTIONS
DECISION FORMATION
DECISION SHIFT
DECISION CHANGE
X1 Exploratory Pilot Study
ES1 Exploratory Pilot Study
GROUP 1
X2 Exploratory Studies
ES1 FINDINGS DRIVE ES2A-C STUDY DESIGN
ES2a-ES2b Exploratory Detail Studies
GROUP 2
ES2c Exploratory Case Studies x6
ES2A-B DRIVE STUDY DESIGN
X3 Transition Studies
ES3a Structured Exploratory Study: Typical Influences
GROUP 1
GROUP 2
ES1-3 FINDINGS DRIVE ES4A-B STUDY DESIGN
ES3b Exploratory Discussion Analysis
AR
CL
ES3c Exploratory Exemplar Case
CL
AR
Z1 Systematic Case Studies
ES4A-B FINDINGS DRIVE SS1 STUDY DESIGN
SS1 SYSTEMATIC Case Studies x6
Z2 Systematic Case Studies
SS1 FINDINGS DRIVE SS2A-C STUDY DESIGN
SS2a-c SYSTEMATIC Case Studies x20
STUDY WITH GROUP 1
STUDIES ON DATA GENERATED WITH BOTH GROUPS 1 AND 2
STUDY ON DATA WITH GROUP 2
STUDIES ON DATA WITH GROUP 3

3.2 Research design and its rationale

3.2.1 Methodology

The core aim of this research was twofold: to i) understand values-and-frames influences and effects in decision-making concerning or affecting project sustainability, to then ii) identify opportunities for project sustainability improvements, later conceptualised as more meaningful choices. In brief, the objectives are summarised in Table 22. As the research was dealing with the analysis of complex, dynamic, and disordered discussions, it became necessary to focus on specific examples and to prepare for those by understanding a basic knowledge territory before understanding something of each context.

Table 22 Overall research objectives

Variables and associations	Objectives
(i) Variables and their interactions	To understand the relationships between human values, frames, and framing in decision-making about sustainability by exploring project decision processes.
(i) Frame options and effects	To understand which frames can work with values, with what effects on decisions.
(ii) Space and opportunity to improve sustainability	To understand where any spaces and opportunities already exist for project sustainability improvement, including those with potential.
(ii) Action and management	To understand what has been and can be done to improve.

To do so, the research draws on existing methods in AEC design and its management, and behavioural decision-making. A new composite values-and-frames 'lens' on architect-stakeholder discussions was developed, operationalised, and applied to explore whether it provides a new way to better understand the pathways by which sustainability choices are made (or missed). The methods needed to facilitate descriptively theorising (Girod *et al.*, 2003) the influences of values-and-frames on decision-making and then improvement opportunities towards sustainability. If successful, this approach should lead to specific insights on how stakeholder/client decision-making discussions affecting sustainability can be improved in architectural practice. Several context-specific 'lenses' are used (§1.1.2, Table 2) as methodological, conceptual, and analytical devices to

establish a specific perspective then focus on specific aspects, as explained and justified in the context of their use. Using such lenses help to make sense of complex problems (Swanson and Bianchini, 2015) whereby a useful lens can "lead analysts to different judgements about what is relevant and important" (Allison, 1971:253, in Cram, 2005), e.g., adopting novel angles on tricky problems for new insights such as goal framing (Vansteenkiste *et al*., 2007) or participatory design (Clark, 2008).

To achieve the study aims initially outlined in Table 7 above and §3.2.4 below, there were three major strands of work required (based on the research problem, empirical, and methodological literature reviewed above and herein). Firstly, to explore broad knowledge boundaries of values-and-frames separately and together in decision-making affecting sustainability and establish an initial knowledge landscape (PA1-EA1). Secondly, based on those insights, to develop a mapping method to identify, and follow, frames and human values (of the people involved) in their discussions (PA2-EA2). Thirdly, to use that mapping method to follow co-evolutions and influences of values-and-frames on interim, and then any 'final', sustainability decisions, following their pathways (EA1-EA4). These insights and any unpredictable or emergent factors are also examined for potential further study (EA4) based on theoretical sampling procedures outlined below (§3.5).

The usefulness of the mapping method (§3.7) is imperative: otherwise, any patterns in values-and-frames would not be discernible. Yet methodological traditions for values and frames are different to each other and to what was needed here. In particular, the study of both individual and inter-individual cognitive-behavioural and communicative factors over time also implicitly required a more integrated approach (Belton and Stewart, 2010; Patton, 2015), whose use leads to new insights by combining multiple methods (Patton, 2015; Creswell and Poth, 2016). Theories of naturalistic (e.g., Klein, 2008) and context-dependent constructed choice (e.g., Krantz and Kunreuther, 2007; Marx and

Weber, 2012) were interpreted to suggest that dealing with the analysis of subtle but rich and complex, non-uniform, inter-personal discussions required focusing on very specific examples, with a good understanding of their context. This approach aligns well with the conceptualisation of localised values developed in an approach known as '*WeValue*' (Harder and Burford, (2018), and so that perspective of values was ultimately adopted as the main one (§2.3.4 and §3.4.2). Finally, rather than consider frames as constructs of individual stakeholders, a more conceptual alignment was needed with considering framing as socially-constructed meaning (Cornelissen & Werner, 2014).

To provide the depth of complex but contextualised examples and resulting 'thick' descriptions (Ryle, 1971) of values-and-frames required to yield rich findings, capable of revealing patterns across specific instances, a case-based grounded approach (Yin, 2014) was the most appropriate (see §3.2.3) in helping to derive theoretical insights and some preliminary principles. To build an understanding of data patterns derived from real experiences—an approach different to hypothesis testing—grounded techniques of memoing, constant comparison, alongside both deductive and inductive coding/analysis were adopted (see §3.4-3.6) (cf. Strauss and Corbin, 1998; Charmaz, 2014). As there were so many unknown elements, a multi-case approach was designed (see §3.2.5) across architects who use different professional approaches and a variety of projects. Initially the boundaries of the case studies and the boundaries of the units-of-analysis were roughly specified, but later realised this would need revision during Exploratory Study ES2 (§4.3).

Concerning the second and third strand of work—the mapping and analysis of decision-making discussions—it was decided to first operationalise values and frames, and later values-and-frames as a composite concept based on emergent findings, and to search for possible evidence of any/each/all of them as influencing 'content' in architect-stakeholder discussions—which became the main unit-of-

analysis. However, it was anticipated that the interactions within and between values-and-frames, and their changes in time across a series of discussions in a project, would require them to also be considered as 'process' (see §2.4.3), with documentation needed on their sequencing and co-evolutions (§2.4.6). The rationale for this approach to follow both content and process is supported by: behavioural decision research (e.g. Johnson *et al*., 2012; Klotz, 2018); and management and operations research (Cooper *et al.*, 2008) with researchers advocating grounded theory methods to overcome deficiencies in quality and frequency of qualitative theory-building (Suddaby, 2006; Binder and Edwards, 2010)); and their sequencing by Query Theory (Johnson *et al.*, 2007; Weber *et al.*, 2007; Shealy and Klotz, 2015). It was thus considered that following both content and process would embed in the results the potential for wider applicability across those fields. Taken together, this methodology and methods are consistent with AEC design-and-management research. In the following sub-sections, the logic of the methodology and its philosophical underpinnings are unfolded.

3.2.2 Philosophical scaffold

Good research practice suggests building a research design from an ontological and epistemological framework (Denzin and Lincoln, 2005) (keywords italicised). The fundamentals of the research philosophy 'scaffolding' were built on a *pragmatic pluralistic* foundation 'brought into' the research, which allowed the development of later, phase-appropriate ontology and epistemology to construct a framework. The nature of values-and-frames as both individual and interpersonal constructs and processes benefitted from an *intersubjective relativist* ontology, *pragmatic constructionist* epistemology together befitting a qualitative exploratory study, captured in Figure 13.

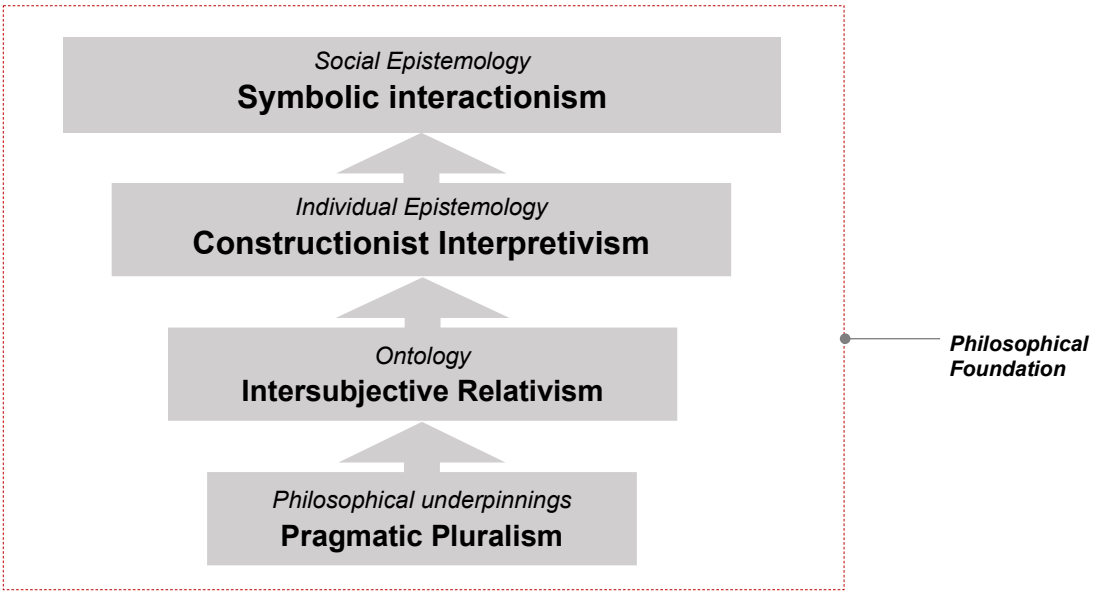


Figure 13 Pyramid of philosophical scaffolding, including philosophical underpinnings, ontology, and epistemologies

Philosophical underpinnings. Critical to intellectual integrity is the need to identify philosophical underpinnings of the research (including logic, reality and the constitution of knowledge) and the rationale behind, or justification for, using particular research methods (McGregor and Murnane, 2010). Further, it is beneficial not only for structuring and managing the research, but also for those tasked with reading it for the research to be: 1) unambiguous about the research philosophy (Dainty, 2009), 2) coherent and succinct (Brolly, 2016; pers.comm.) about connections amongst underpinning philosophy, methodology, and operationalisation through research methods, analyses, and reporting of findings. Thus, this section summarises the philosophical underpinnings, ontology, and epistemology which form the research philosophy foundations and scaffold from which consistent methods are built (Crotty, 1998; Creswell, 2003).

Based on the author's previous experience in architectural practice, the preliminary position 'brought into' the research was best described as a *pragmatic pluralism,* which drove the research as philosophical underpinning (Creswell, 2003:13). This position allows that that there are multiple ways of knowing; not

all of them function or are used to the same extent in every individual; and human knowledge can be co-constructed, co-evolutionary and multiply-instantiated (Crotty, 1998; Blaikie, 2007; Trochim, 2006). This importantly allows for the interpersonal nature of the research, i.e., not based on the study of an individual subject or non-human entity.

Ontologically in terms of the constitution of reality and how humans come to apprehend and understand it, a *cautious realism* was initially adopted which aligned with pragmatic pluralist foundations. It was cautious in allowing the possibility for multiple versions of reality in the minds of individuals trying to make sense of the real world, which exists independent of humans' minds and capacities with which to apprehend it (after Blaikie, 2007). Correspondingly, there is an observable reality of which humans are part, and it is possible but unlikely that humans can perfectly accurately perceive and know an independent external reality owing to human sense imperfections and the processes involved with observation and subsequent interpretation (Blaikie, 2007:13-15). However, it was later noted that the emergent findings and reflections at study transition (ES2-3, §4.3.5) and return to literature suggested this was technically at odds with the socially-constructed reality found through ES2. This suggested a more relativistic ontology—*intersubjective relativism*—allowing plural, contextualised truths "associated with different constructions of reality" (Blaikie, 2007:25) sharing features intersubjectively (Hass, 1988) but not identically (see §4.4.3.3), thus adopted.

Epistemologically in terms of the constitution of knowledge and how humans come to obtain it, *constructionism* was adopted which aligns with both the pragmatic pluralist foundation and later-adopted *intersubjective relativism*. To make sense of the world, humans 'construct' ways of seeing it—or 'reading' the world, interpreting and understanding it, situated within their historical and cultural backgrounds and contexts—thus build their knowledge of the world, and

communicate these constructions (Crotty, 1998; Papert and Harel, 1991). *Constructionism* regards the purposeful (or conscious) production of knowledge and learning by building up the constituents and structures of knowledge as a "public entity" bridging internal-and-external (versus constructivism as individuals' cognitive knowledge-building) (Ackermann, 2001; Papert and Harel, 1991). Here, meaning and knowledge is cumulatively constructed by people (i.e., individuals or multiples) and most appropriately in and through the social context (e.g., Crotty, 1998).

More specifically, an *interpretive constructionist* approach was adopted because of the need to explain coherently not only how the participants came to understand their discussion counterparts, but also how results were analysed and interpreted, and then how to coherently accommodate early findings, evolving research needs, and any commensurate methodological refinements; this is explicitly supported by the pragmatic pluralism positioning (Crotty, 1998; Blaikie, 2007). Thus, human processes (including those examined herein) continue to require exploration and interpretation, where the development of existing knowledge and the creation of new knowledge as societies, environments, and technologies are created, interact, are interacted with, and co-evolve (Crotty, 1998; Brand, 2004).

To help explain how frames form and operate both cognitively and socially, and carry information and meaning for both individual and inter-individual interactions, the facet of *interpretivism* and sub-category of *social symbolic interactionism* were added to the epistemology. *Interpretivism* concerns the theoretical perspective required during the analysis phases to help explain how participants interpreted and reassembled individual-human and contextual project-based information as frames through social symbolic interactionism. This holds that meaning is made, transmitted, and interpreted through the signs and symbols (e.g., speech, behaviour, text, drawings, etc.) which are situated in a social

and historical context and socially constructed and communicated (e.g., Blumer, 1986; Littlejohn and Foss, 2011; Crotty, 1998). In this view, neither (constructionist) social research nor human interactions and interpretations are value-free and 'bracketed' from individuals' contexts and histories (Crotty, 1998) because values guide behaviour (Schwartz, 2009). *Interpretivist social symbolic interactionism* was needed because it facilitated and explained the role of language and interpretation in contextually formulating and framing sustainability issues, how they are communicated, carry meaning, and in that meaning can manifest and express speakers' values and their interpretations situated in the project and listener context.

Researcher positioning. The author's on-going employment and embeddedness in the profession and industry studied required an element of auto-ethnographical recognition. This professional 'social' positioning and the concomitant acknowledgement of past and emerging experience informs both theoretical and practical interpretations (Creswell, 2003:9). This positioning has also provided intimate, subtle, and nuanced insights available to researchers socially situated in their studied environments. Any drawbacks were managed through the rigorous procedures outlined below.

3.2.3 Case-based grounded research approach

Human decision-making, values, frames, and framing are by their natures qualitative variables requiring a qualitative research design and data generation methods, whilst aligning with and supported by the epistemological positioning and philosophical scaffold. Through a comparative auditioning process, several research approaches and designs were examined and evaluated to determine their appropriateness for, and application to, the research field, problem, and questions. The methodological literature review suggested one way to design and conduct this research: for it to be naturally situated in the studied field with a

commensurate research design, rather than driven blindly by the field's dominant methods or by inflexible and predetermined methods (Yin, 2014). Preliminary criteria used for identifying the research design are compiled in Table 23.

Table 23 Initial criteria for research design capabilities (after Yin, 2014)

#	Preliminary research design criteria
1	Cope with overlapping and dynamic nature of the research subject, area, variables, and associations examined.
2	Help to unpack, problematise, and then operationalise the above.
3	Facilitate a flexible, exploratory strategy for both the above.
4	Lead to the generation of analysable data commensurate with the research philosophy, methodology, and all of the above.

Being guided by the needs of the specific research problem, a pragmatic approach aligns with the methodological pluralism (Blaikie, 2007) commensurate with the incremental identification and definition of variables and associations through problematising and operationalising the research. Based on the above criteria and conditions, the philosophical scaffolding guided the shortlisting (Table 24) and selection of two most appropriate and well-established methodological candidates to structure and guide the research: case study and grounded approach. The research satisfies the case study use conditions (Table 25) recommended by Yin (2014). Case study methodology supports and encourages using Grounded Theory (GT) among others, and case-based research structuring is reciprocally used by grounded theorists. The most important characteristics of these two traditions were: 1) flexibility toward pluralistic approaches and methods (Yin, 2014), capability to be constructed and developed as research developed and study area became clearer (*ibid*., Charmaz, 2006); and 2) accommodation of multiple methods for both data generation and data

Table 24 Shortlisted research design methods

#	Preliminary method	Preliminary outline assessment
1	**Case Study**	Potential candidate method fulfilling research design criteria.
2	**Grounded theory**	Potential candidate method fulfilling research design criteria.
3	**Phenomenology**	De-listed as too narrowly focused on individual experiences rather than underpinning influences and effects of multiple individuals.
4	**Ethnography**	De-listed as too broadly focused on groups and their experiences rather than underpinning influences and effects.
5	**Design protocol research**	De-listed as too narrowly focused on individual designing and design procedures related to creativity and creation of novel solutions.

analysis (Yin, 2014), both necessary because of unclear variables and associations in early stages.

Table 25 Case study criteria and conditions for its use (after Yin, 2014:9-16)

	Conditions for Use	Condition Satisfied?
1	How or Why form of research question	Yes; see §3.2.4 below
2	Does not require control over behavioural events	Yes; behavioural manipulation was not possible; the isolation of variables on which to experiment is not possible (Yin, 2014:12); the research relies on information regarding events as experienced in professional practice by individuals.
3	Focuses on contemporary events (as opposed to historical)	Yes; direct observation of events was possible; interviews of individuals involved was possible (Yin, 2014:12), as identified in §1.2 above.
	Definitional Criteria	**Criteria Satisfied?**
1	"Investigates a contemporary phenomenon (the 'case') in depth and within its real-world context (2014:16)"	Yes; as identified in point 3 above; the research benefits from earlier pre-research field observations which may be extended into the current research.
2	"The boundaries between phenomenon and context may not be clearly evident (2014:16)"	Yes; as identified in §1.1 and 1.2 above, boundaries were unclear.

Case study methods provide guidance for deductive and inductive approaches to theory generation, grounded methods provide detailed strategies for inductive and abductive approaches, which are now also encouraged in case study methodology (Yin, 2014; Charmaz, 2006). Case study was appropriate because the research: involves a how or why form of research question; does not require control over behavioural events; and focuses on contemporary events (versus ancient history) (Yin, 2014). Supplementing case study with grounded techniques was appropriate because: the research benefits from understanding the context and setting, generating practice-based theoretical observations whilst learning the state-of-the-art; an examination of the nature and complexity of actual decision-making processes is afforded; entirely new or underexplored areas are examined (Fernández, 2004).

Grounded approach as integrated with the case-based methodology provides appropriate tools and techniques to 'unpack' conceptually dense and layered research problem, and ultimately provide analytical support. The data has been generated and analysed using five specific techniques adopted from GT: theoretical sampling and saturation (§3.5.1); memoing and the constant comparison method

(Figure 22), (§3.6.1); and generating theoretical insights via an iterative inductive-deductive-abductive loop (Figure 21) (Corbin and Strauss, 1998; Charmaz, 2006), (§3.6). Both case study methodology and grounded approaches are well-established methods of generalisation and transferability (§3.8) given appropriate case boundaries (§3.2.5). Case-based methods are used to aid in analytic generalisation (Yin, 2014) facilitated through a "replication logic" across multiple cases to 'triangulate' or cross-compare data sets from three participant-groups and verify results through cases that could either be similar (*literal replication*) or contrasting for predictable reasons (*theoretical replication*) (Yin, 2014). Thus, using a case-based grounded approach is appropriate and justified given the knowledge gap identified, the qualitative nature of the study variables, and consistent with the discipline (Knight and Ruddock, 2009). The complete research design was compiled in a diagram (Figure 11), including data generation methods (Table 26) and analysis methods in a framework (Table 35-37). With this, the main research design components (Table 27) are outlined below, followed by the research and case structuring and study phasing, then data generation and analysis procedures.

Table 26 Case study data generation methods (Yin, 2014)

#	Data generation methods
1	Early, pre-research field observations
2	Academic literature and project documentation as secondary data
3	Pilot studies
4	Exploratory work of estimable but unforeseeable length
5	Systematic studies built on the exploratory findings
6	Key informant interviews with varied intent and focus, including participant's experience and observations
7	Focus group workshops
8	Survey questionnaires

Table 27 Five key research design components and location in the text (adapted fr Yin, 2014:30-36)

Key components	Purpose	Section
Proposition (hypothetical)	Suggests what could be a problem in practice to be researched, potentially the type of problem, and where to begin looking for evidence	*§1.1.1 and §3.8.1*
Research Questions	Defines the focus and direction for the research, connects it to extant literature and previous empirical research through clearly identifying a knowledge gap and suggesting a possible research pathway which then guides the research design.	*§3.2.4*
Units-of-Analysis and Case Boundaries	Defines, bounds, and delineates specifically the *scope* and '*location'* of study and data generation *sources* through inclusion and exclusion criteria of precisely what is researched and its boundaries.	*§3.2.5*
Logic linking data to 'theoretical propositions'	Research methodology and philosophical scaffold developed in response to the knowledge gap, research questions, and research problem type (i.e. qualitative and underexplored) guiding the research design and conduct, data generation design to generate data which can be analysed, and data analysis methods with admissible analysis procedures and actions according to the methodology, philosophical scaffold, and research design.	*§3.2.1, §3.2.2, §3.4-3.5, §3.6.*
Interpretation criteria for findings	Provides principles and measures to assess the appropriateness, adequacy, 'fit', and significance of findings and explanations.	*§3.8*

3.2.4 Research questions, aims, and objectives

This research began as the search for human influences in decision-making impacting project sustainability and therein the role of human values (URQ in Table 28). To establish the need for such research through literature review, it was subsequently found that in everyday project decision-making, values could not manifest without a means for them to be revealed. That review showed that frames and framing have a significant role not only in values emergence but also in the ways that decisions were made. Hence, initially, the need for frames and their relationships with values and decisions were not known. A 'central' set of central research questions (CRQ, Table 28) was then developed on which the initial research design was based. These questions first guided the earlier exploratory studies, as will be described below. However, based on those primary empirical and emergent findings, literature, and discussions with the supervision team, the study was developed and refined. More focused emergent questions (ERQ) were then devised. Thus, during and resulting from the exploratory studies, the emergent research questions and associated aims then became the main quest incorporating the earlier aims. The research aims, objectives, and outputs are mapped onto these three questions in Table 29 below.

Table 28 Initial, exploratory, and emergent research questions

Element	#	Research questions
INITIAL UNDERPINNING RESEARCH QUESTION	URQ	Which human influences in decision-making impacting project sustainability are accessible, measurable, and leverageable? How? What is the role of human values?
CENTRAL EXPLORATORY RESEARCH QUESTIONS	CRQ1	What are the interactions and effects of values and frames together on decisions affecting sustainability from architects' perspectives?
	CRQ2	How are values and frames acting together in decision processes in ways that interested parties can use to improve and manage longer-term sustainability outcomes?
EMERGENT RESEARCH QUESTIONS	ERQ1	What are the natural pathways of values' influences via frames in architect-stakeholder decision-making discussions and their effects on the 'spaces' available for more individually-meaningful choices concerning sustainability?
	ERQ2	How can these pathways be clearly traced and tracked through individual discussions and along the project chronology?

The main quest thus became three-fold. The First Main Need was prioritised to know how to improve project sustainability through decision-making, ultimately operationalised as the search for more opportunities to create space for individually-meaningful choice concerning sustainability. But because literature links values and frames to decision-making, concentration was first on understanding the basic territory of values and frames in routine decision-making in which sustainability options were framed and decisions made; from it, finding such spaces and opportunities would then be examined.

The Second Main Need was to identify where the values of architects and stakeholders currently influence any decisions regarding sustainability. But because early findings showed that projects are temporally extended and subject to change, the need was also to understand the 'natural pathways' of influences in architect-stakeholder discussions, e.g., values indirectly, or via frames, or otherwise. Answering the first, broader part would help to determine the landscape with which the second, focused part could be answered. This necessarily required an approach to understanding framing and decision-making over time, e.g., as processes, including their relationships to each other. Studying these variables and their interactions would then help identify evidence about not

only values-and-frames influences on meaningful choice and its relation to final decisions, but also the 'spaces' within which choices are framed and made, as well as relevant factors of such spaces, such as their qualities and characteristics, how such spaces and meaningful choices relate to values-and-frames influences.

Table 29 Purposes, aims, objectives, and outputs of the research

Purposes and ***Nature***	**Aim**	**Objectives**	**Outputs**
Preliminary Sense-making and Research Design ***Exploratory-Descriptive***	To understand the relationships between human values and problem-frames in 'sustainable design'* decision processes as unclear variables in a nascent area of inquiry to then determine where in those processes the influences of values and frames may manifest. To determine existing understanding of those influences, establish the research problem and need, then design a research pathway.	To problematise and focus the Initial Underpinning Research Question from the preliminary Research Proposal into main research questions, aims, and objectives (herein) for Thesis Panel approval.	*Research Plan* Including: Research questions, literature review, detailed research design. Ethics Application.
		To identify, discuss, and critically evaluate the literature which establishes the research problem, need, and scope.	
		To define the key variables and their parameters to develop a research design.	
		To determine methods to study the problem and describe the research methods in more detail.	
Exploratory Primary Data Studies ***Exploratory, Descriptive*** *(and, later, Descriptive-Explanatory)*	To explore initial knowledge boundaries of values & problem-frames in the decision-making process affecting sustainability. To explore the relationships and interactions of human values and problem-frames in decision-making processes affecting sustainability. To determine any influence of values on the formulation and framing of sustainability as a decision-problem in decision-making processes as above.	To unpack the process of *sustainability problem-framing in decision-making* (through a values and frames lens) as a potentially key, fundamental influence in project sustainability outcomes. []	*Conference Papers, Presentations, and Posters.* *Proof-of-Concept (Transfer) Document.* *Journal Papers and Thesis.*
		To identify any values and problem-frames, their roles, interactions, influences, and effects on decisions in sustainable design* decision-making processes as they are experienced by a cohort of architectural designers through their engagement with key decision-making stakeholders therein.	
		To distinguish whose values are most influential and when, e.g., the most important phases of problem-framing processes in which values influences were found for further exploration.	
	To permit, describe, and evaluate any significant and relevant emergent factors that arise for further study.	To identify and assess any emergent factors for further analysis and potential study.	
		To consider any variations and plausible explanations within and between cases, and across groups.	
		To consider how the findings can be useful for architectural practice.	
		To reflect on the findings from the exploratory data and determine any modifications necessary in a controlled and justifiable evolution of the focus or methods.	
		To evaluate the analysis design and methods and make recommendations for refinements to the analysis design methods.	

(Continued below)

Table 29 (cont.) Purposes, aims, objectives, and outputs of the research

Purposes and ***Nature***	**Aim**	**Objectives**	**Outputs**
Systematic Primary Data Studies **Systematic, Descriptive-Explanatory**	Based on emergent findings and key emergent factors from the previous studies, to describe any patterns which may be useful to practitioners, and explain any patterns and effects with principles toward sustainability improvements.	To refute, confirm, or extend previous findings with more systematic studies of a wider range of cases and sustainability decision-making discussions.	*Journal Papers and Thesis*
		To assess how the interactions between values-and-frames support or suppress opportunities for sustainability improvements.	
		To focus on any useful factors and patterns in the findings and applications that would be useful for architectural practitioners in everyday practice.	
		To identify and assess any emergent factors for further examination or future research.	
		To evaluate any variations and plausible explanations within and between cases, and across groups.	

** Whilst the preliminary scope was initially outlined as 'sustainable design' decision processes, emergent findings from the second exploratory study (ES2) showed that this scope was too narrow to capture the experiences recounted by commercially-focused architectural practitioners (G2). Because G2 participants' responses highlighted the importance of later challenges in decision-making creating new, negative influences, the scope was expanded to include the decision-making process in a client-project case as a single, evolving process punctuated by key decision-making events as units-of-analysis (further explained below, §3.2.5.2).*

The Third Main Need was to develop a mapping method to trace and track these influences through discussions along a projects' chronology, based on the five factors required for mapping, Table 30. To understand and communicate values influence pathways through discussions in a typical project, several attempts at mapping relationship sequences between variables and their timings led to the final method, formed through three main phases of development, outlined in §3.7, with maps presented in Chapters 4-5. Together this would help to identify spaces where meaningful choices happen and any existing or possible opportunities as improvement routes. Based on preliminary exploratory findings, the focus was narrowed to primarily architect-client discussions because there were many constraints on meaningful choices from and by other stakeholders (see ES3/§4.4).

Table 30 Five factors required for mapping values influence pathways

#	Factors	Subfactors
[A]	Conceptualise and discretise discussions in the decision-making process.	
[B]	Locate the variables (values, frames, decisions/decision-making (V, F, DM));	[B1] The architects' recounted discussions with clients for the values involved; and
		[B2] How sustainability was framed.
[C]	Determine their interactions	[C1] Relationships of values to frames and meaningful choice in decision-making;
		[C2] The effects of framing on values, and
		[C3] The effects of values and framing on decision-making.
[D]	Assess their effects on meaningful choice (MCh)	[D1] This implied finding what all these variables look like in practice,
		[D2] to then establish their interrelationships.
[E]	Identify key junctures of values influence, and which were the most impactful based on changes to sustainability outcomes (e.g., increase/decrease).	

3.2.5 Research structuring and phasing

To conduct the research in an orderly manner, the research structure was derived from case study methodology and phased according to the research needs as guided by the philosophical scaffolding and methodology. The natures and types of the three purpose-based phases are described as follows. This is followed by a description of the units-of-analysis, case organisation, and other research design components.

3.2.5.1 Study phases and case study types

To account for observations made in the field prior to entering the research planning, Phase-0 (Figure 2) produced a preliminary working hypothesis (§1.1.1) which was translated into the preliminary research proposal as the first deductive portion of a grounded deductive-inductive-abductive loop (Figure 21). On formal acceptance of the proposal, the research began with a concurrent research plan and literature reviews in Phase-1, culminating in the main research design. Once approved, Phase-2 commenced where the Exploratory Pilot Study ES1 was designed in detail, culminating in field entry, data generation, analysis, and reporting in the first conference papers (see Appendix-7). That study included an initial foray into concept mapping, Study-part MA1, feeding into ES1 analysis and findings. Through

concurrent development with subsequent conference papers, the formal, Preliminary Exploratory Study ES2 was designed and conducted, and then analysed in three parts ES2a-ES2c due to data richness, problem complexity, and emergent findings, including a second, detailed mapping study MA2 of that data.

The nature of the first phase as a proposal, planning phase, and preliminary studies was initially unclear and therefore justifiably exploratory. Therefore, it was reasonable to conclude that exploratory case study was the most appropriate type for the first phase. Exploratory studies were chosen because values and frames had never been studied conjointly in the context of architectural decision-making affecting sustainability—neither on isolated decisions nor on decisions over time in complex projects. For this reason, the exploratory studies were split into two phases to account for the need to first establish the broad landscape in ES2, Phase-2, followed by a more structured exploration of the core issues and emergent findings in ES3, Phase-3.

Importantly, it was initially intended to transition from MA2 at the end of Phase-2 to more systematic studies in Phase-3, having established and refined the data generation and analysis methods. However, based on key emergent factors the research was justifiably adjusted to account for the preliminary emergence from MA2 reflection during the phase transition of a key, core factor: there seemed to be a lack of space for individually-meaningful, contextualised choice. Hence, the third, structured exploratory study ES3 adjusted the course of Phase-3 to first examine any typical influences in decision-making to then analyse for the possibility of values-and-frames somehow affecting more individually- meaningful choices. As will become clear through Chapter 4, this was conceptualised through the quality and characteristics of '*spaces for meaningful choice*' as an organising concept describing potentially useful conditions under which sustainability could root and

flourish. Two of the three study-parts, ES3b-ES3c, were developed into and submitted as journal papers.

Upon establishing the viability and richness of the 'meaningful choice' concept and its promising relationship with decision-making about sustainability, the methods and case structuring were promoted to study a wider range of project discussions in a more systematic manner in Phase-4. Two systematic studies were conducted in increasing size from SS1 to SS2 (analysed in three parts, SS2a-SS2c). On conclusion of those analyses, the transition out of the field and into Phase-5 began with a third journal paper developed from SS1, ready to submit, with the intention to develop at least one paper from SS2, followed by concurrent cross-group synthesis and thesis development. Appendix-7 provides peer-reviewed written outputs.

3.2.5.2 Case organisation and boundaries

Original organisation and boundaries. The unit-of-analysis in a case study specifically defines, bounds, and delineates the scope and 'location' of a study and data generation sources through inclusion and exclusion criteria (Yin, 2014), Figure 14. The research was initially designed as a 'Holistic Multiple-Case Study' as indicated in Figure 15, top right-hand corner, in which a participant was originally designated as a case, and each client-project they identified thus designated as a single unit-of-analysis, both bounded by the physical, temporal, and cultural contexts in which they developed. However, subsequent analysis during ES2 revealed inadequacies, requiring essential and justified refinements to this design. It was noted that the broad case boundaries were misaligned with granularity or detail scale of both the research questions and data generated. It became obvious of the difficulty of single-project units-of-analysis to capture the complexity and richness of

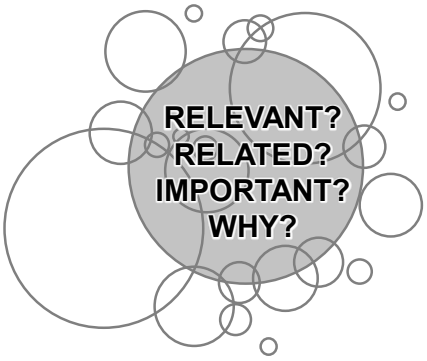


Figure 14 Lens of inclusion/exclusion

foundational human influences therein, alongside variations across multiple projects, clients, and stakeholders.

Final revised cases and units-of-analysis. Based on Supervisors review and subsequent Panel agreement, the case boundaries were redrawn as 'Embedded Multiple-Case Studies' (Figure 15, bottom right-hand corner). Each client-project identified by a participant was designated as a case, and each decision-making discussion designated as a single unit-of-analysis, both bounded by their contexts. This development is further explained in Chapter 4. Each participant was then logically organised within their architectural practice or organisation as Case Group providing context for their framing and decision-making discussions. The practitioner's 'parent' organisation, which they represent, exists as a legally and commercially significant entity according to its type, structure, organisation. All participants have been recruited based on the selection criteria outlined below. Participants were considered as a key informant based on providing at least one project with at least two units-of-analysis through their recounted experiences, owing to their role, responsibility, and experience.

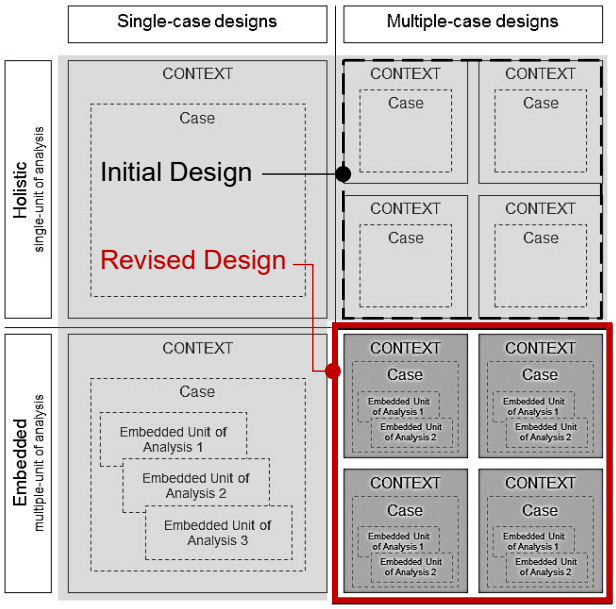


Figure 15 Selection of Units of Analysis and Case Study organisation (Adapted from Yin, 2012)

Study organisation, participant groups, and phases. The organisation of studies and groups was first based on data generation then data analysis, illustrated in Figure 3. Group-G1 was entirely exploratory, providing data for the pilot and then key informant data 'promoted' for analysis alongside Group-G2 for key portions of

Studies ES2-ES3. Once the procedures were approved therein, Group-G2 case data was then promoted and studied systematically in SS1. Group-G3 was then studied systematically using the procedures developed and agreed through previous studies.

Case replication logic. These cases and groupings are analytically necessary, relevant, and significant to the development of applicable theoretical insights through comparison and contrast of multiple individuals and cases, and multiple groupings of cases in organisations. This tactic of repeating the same procedures in different situations is designated '*replication logic'* in case study methods (Yin, 2014). Replication logic in qualitative case study is contrasted with 'sampling logic' in quantitative studies. Multiple qualitative cases can be considered analogous to 'multiple experiments' that attempt to follow a 'replication design' (Yin, 2014). By employing the same procedures herein with individual units-of-analysis within similarly-bounded cases from different participants and participant groupings—i.e. different practices/organisations (i.e. with different approaches to architecture and/or sustainability)—in a *'theoretical replication*', the findings will vary from the previous cases and practices for predictable reasons (*ibid*.) (i.e., they have stronger or weaker views about sustainability's importance compared to design or commercial interests, have different values, or use different frames).

Accordingly, each case study was an in-depth, detailed investigation of concrete set of contemporary circumstances and phenomena in real-world contexts (Yin, 2014) with previous or current projects and clients—as compared to a laboratory context where conditions are controlled and manipulated. The 'theoretical replication' of procedures across multiple cases and case groupings thus provided conceptual levers toward analytically and theoretically significant findings. Moreover, Yin (2014:57) argues that "the evidence from multiple cases is often considered more compelling, and the overall study is therefore regarded as being more robust".

3.3 Research ethics

Agreements to gain access to participants have been attained through the university Research Ethics Committee. The treatment of human participants and data security and confidentiality included the items outlined in Table 31 and summarised with the suite of ethics documents included in Appendix-3.1. The Ethics Committee judged the study as Low Risk and approved to continue, following the procedures and rationales outlined below.

Table 31 Ethical Procedures: Treatment of human participants and data; location of detail in Appendix-3.1

Treatment	Item	Apx-3.1 location
Treatment of human participants including issues of:	Institutional permissions gained, including committee approvals that were obtained.	§A3.1.2
	Ethical matters approved related to recruitment materials and processes and a plan to address them.	§A3.1.3, §A3.1.6
	Ethical matters approved related to data generation locations.	§A3.1.5
	Ethical matters approved related to data generation activities (these included if participants refused participation or wished early withdrawal from the study and response to any predicable adverse events) and a plan to address them.	§A3.1.3-§A3.1.5
Treatment of data is described (including archival data), including issues of:	Ethical matters approved related to how data are anonymised and kept confidential and any matters related to each.	§A3.1.3-§A3.1.4
	Ethical matters approved related to protection of confidential data, data storage procedures, data dissemination, who had access to the data, and when the data will be destroyed.	§A3.1.3-§A3.1.4

3.4 Data generation

Three principal data generation methods were employed, with three types of 'sampling' towards saturation. The goal of data generation for this research was to provide information for systematic, replicable, and verifiable analysis (King *et al*., 1994) to identify and investigate the variables, associations, and effects as explained above. Values and frames are by their natures qualitative variables implying the need for qualitative data generation methods, aligned with, and supported by the philosophical positioning and methodology. Based on the foregoing discussions of methods suitable to obtaining such qualitative data, four were by their nature appropriate and developed for this study (in temporal order

as employed): document/text reviews, focus groups, questionnaires, and interviews (Yin, 2014), summarised below. The last three have previously been used to study values in similar studies in AEC (Zhang *et al.*, 2008; Mills, 2013; Novak, 2013). In design and framing, Hey *et al.*, (2008) used focus groups, and similar studies have used expert interview and survey instruments (Hey *et al.*, 2008; Paton and Dorst, 2011; Robinson *et al.*, 2013). Text analysis was included to account for literature reviews both during research design and later research development and publication.

3.4.1 Text analysis

Yin (2014) was interpreted to suggest that text analyses were viable methods of generating core concepts and relationships from literature and field documents. In this research, text analyses were initially guided by Crotty (1998), Creswell (2007), and Yin (2014), of extant literature. Thus, the key variables were identified (§2) as access points in human interactions and processes in design decision processes affecting sustainability. Studies LIT1-LIT3 from which the literature review chapter were derived were multi-phase iterative literature reviews. Variables were pinpointed and summarised graphically in an outline Conceptual Framework (Figure 10). Then, operational definitions and principal categories for data coding were also identified deductively from literature. These provided an initial conceptualisation of constructs and relations to be examined in data. Text analyses were also conducted on primary data using thematic content analysis methods following Braun and Clarke (2006). Analyses of secondary data such as project documents (Yin, 2014) were originally entertained but abandoned because of the richness of data provided through the remaining methods.

3.4.2 Focus group workshops: obtaining background and contextual information

Literatures were searched for methods to gain insight into the human values of individuals and working together as a group—in these cases as formalised organisations—to obtain a good understanding of the values context of the participants. Established methods for working with groups include focus groups, group interviewing, concept mapping, panel discussions, citizen juries, and consensus panels (Khan *et al*., 1991; Ryan *et al*., 2001; Kamberelis and Dimitriadis, 2013; Burford *et al*., 2015). Based on the above criteria, focus groups were selected to form an understanding of participants as individuals in groups and their contexts. Focus groups also fully respond to the epistemological criterion for logically satisfying each level of the adopted scaffold; they permit, promote, and most importantly record social symbolic interactions between participants; they recognise the situatedness of the knowledge derived; they permit both interpretation and construction of knowledge not only between participants but also derived from participants through their data.

Thus, a values focus group 'workshop-type' elicitation process known as *WeValue* was chosen as validated (content, substantive, unitary, consequential, and generalisability validity (Harder *et al*., 2014)) in several publications concerning values and sustainability, and used in multiple contexts (see Harder and Burford, 2018:x). It was chosen based on its pedigree, refinement, validation, and applicability in the current research context. Training was received over several sessions by the WeValue development team in its use and especially how to 'spot' values; they also advised on the review, checking, and use of the process in this research context. WeValue was used to elicit, capture and record shared values, or what people hold as most worthwhile, important, and meaningful working as a group and as individuals therein, including what is important about their participation in that group, for both reflection and evaluation (Burford *et al*., 2015).

Participants were provided with a scaffolding including visual 'triggers' (see Appendix-3.3) to crystallise articulations of their shared values through facilitated reflections and negotiations of values statements verbally, then in writing (Podger *et al*., 2016; Harder and Burford, 2018). These produced sets of prioritised statements of the key shared values of each organisation based on contributions from, and negotiated between, individual participants. An example of these statement's form was, "It is important to us that we assist clients to make informed decisions". Semi-structured interviews (§3.4.4) were then used with questions designed to reveal the human values and communication frames brought to project discussions. This focus group process, when paired with values questionnaires conducted therein (§3.4.3) and interview data, therefore informed a robust visualisation of values in sustainability framing dynamics, facilitating repetition logic and cross-case syntheses (Yin, 2014:142).

3.4.3 Values questionnaires

As an established and validated instrument to capture and analyse the human values of participants, the Schwartz 40-item Portrait Values Questionnaire (PVQ-40) (Cieciuch and Schwartz, 2012) to elicit the values of key informants as individuals in all studies bar ES1, i.e., Studies ES2-ES3 and SS1-SS2. The questionnaires were deployed and analysed according to the procedures outlined in the refined Schwartz Values Theory (2012). This provided baseline values data against which architects' values could be triangulated and analysed to determine their effects on framing and decision-making.

The analytic purpose of this standardised survey instrument was two-fold. First, to add a standardised dimension to aid in triangulating interview and workshop methods of eliciting human values. Second, to capture and evaluate how participant values would translate into Schwartz's well-established circumplex structure of universal values (Schwartz and Boehnke, 2004; Hinz *et al*., 2005;

Gollan and Witte, 2014; Bardi *et al*., 2009); and to evaluate the implications of this translation on sustainability decision-making processes. Schwartz's circumplex posits that e.g., self-enhancing values occupy one side of a circumplex whilst self-transcending values occupy the other in a kind of balance; other research has suggested that individuals with stronger self-transcending values generally tend to exhibit more pro-environmental behaviour (e.g., Evans *et al*., 2012; Steg *et al*., 2014; Gatersleben *et al*., 2010; Burford *et al*., 2015). The implications of this are important and addressed in Chapter 4. It was not intended to undertake a quantitative statistical analysis of this instrument as the number of respondents is deemed insufficient to provide worthwhile or generalisable results statistically.

	HOW MUCH LIKE YOU IS THIS PERSON?					
	very much like me	like me	some what like me	a little like me	not like me	not like me at all
1. Thinking up new ideas and being creative is important to him. He likes to do things in his own original way.	☐	☒	☐	☐	☐	☐
2. It is important to him to be rich. He wants to have a lot of money and expensive things.	☐	☐	☐	☒	☐	☐
3. He thinks it is important that every person in the world be treated equally. He believes everyone should have equal opportunities in life.	☐	☐	☒	☐	☐	☐
4. It's very important to him to show his abilities. He wants people to admire what he does.	☐	☐	☐	☐	☒	☐
5. It is important to him to live in secure surroundings. He avoids anything that might endanger his safety.	☐	☐	☒	☐	☐	☐
6. He thinks it is important to do lots of different things in life. He always looks for new things to try.	☐	☐	☒	☐	☐	☐
7. He believes that people should do what they're told. He						

Figure 16 Anonymised PVQ-40 extract (See Appendix-3.3 for full questionnaires)

The Portrait Values Questionnaire contains 40 items each scored on a six-point Likert scale. It is structured as individual statements, with both male and female versions to reduce cognitive processing time involved with translating him-her and to eliminate any bias in this regard. Respondents were given the questionnaire at the start of the WeValue workshop (which also helped to introduce some values concepts alongside the WeValue visual triggers, as above) and instructed to read each description, and decide how much each person is, or is not, like them, then note accordingly. Each description forms one of three or four questions designed for 'scoring' to reveal a set of values and their relative

importance. An anonymised scanned extract from one respondent is illustrated in Figure 16.

3.4.4 Retrospective expert practitioner interviews

As a well-established and validated data generation method (Englander, 2012; Yin, 2014; Charmaz, 2006; Kvale and Brinkmann, 2009), intensive one-to-one interviews with key informants produced the majority of this study's data. Interviews were ideal for capturing individual participants' views of their interactions with others and particularly their experiences in which they both frame sustainability issues in their discussions with others, and interpret the signals and reactions of others. In this way, expert interviews also aligned with and are supported by the above epistemologies and perspectives. Intensive interviews responded to the epistemological criterion for logically satisfying each level of the adopted scaffold; they permitted, promoted, and most importantly recorded via audio and researcher notetaking the social symbolic interactions through informant's retrospective recall of prior experience, current views (Sosniak, 2006), and interactions between researcher and informant. Interviews recognised the situatedness of the knowledge derived not only temporally but culturally and geographically, and this link was maintained in the analyses as relevant. Interviews permitted both interpretation and construction of knowledge not only between researcher and informant (necessarily so because the epistemological basis of interpersonal communication naturally relies on intersubjective interpretation), but also knowledge derived from informants' participation in the form of research findings. Ultimately it was considered that interviews were aligned with the logic of pragmatic pluralism and intersubjective relativism. Furthermore, this form of retrospectively interviewing expert professionals as a valid and reliable method of calling on their recent and prior experiences is well-established (Ericsson, 2006; Hoffman and Lintern, 2006; Sosniak, 2006; Kavakli and Gero, 2002).

In all studies, in-depth, one-to-one interviews were conducted with experienced professionals as per the participant selection criteria outlined in §3.5 below. Interviews were designed and have provided a wide range of data on five key areas of individual's experience, derived from literature on interviewing (Kvale and Brinkmann, 2009; Flick, 2009) and research needs. These interviews and topics were used for Phases 2-3 and later narrowed in Phase-4 based on the findings and emergent factors from previous phases. Through interview, issues were discussed about architect's engagement with key decision-making stakeholders when aiming for decisions initially, and then throughout the project to completion. To identify where and how values enter a discussion, affect its decision-making outcomes, and the role of frames therein, participants were asked about the topics in Table 32, space provided for elaboration, and then emerging leads explored. Semi-structured and open-ended interview questions (see Appendix-3.5) focused on generating multiple cases and Units-of-Analysis. These questions were later tightly refined to focus on a minimum of three specific examples of client-cases, how sustainability discussed and characterised or framed, then decided, specifically including stakeholders and their values in each discussion. From Group-G2, interviews adopted the successful use of visual triggers to aid informant conceptualisation of frames and values topics with Group-G3, to translate concepts into recognised terms used in practice. One refinement from that study was to present both frames and values concept triggers to participants as grouped speech bubbles and images (see Appendix-3.3) based on the WeValue values elicitation methodology.

Table 32 Interviewed topics

	Topics
1	How architects approached architecture and sustainability, generally.
2	What was important and worthwhile to participants and their organisations, generally.
3	How and when architects engaged stakeholders with sustainability/sustainable design, and who were key decision-making stakeholders.
4	How architects discovered stakeholder values and what were those stakeholders' values.
5	How architects communicated and framed sustainability to elicit decisions (such as committing to sustainable solutions, and signing off designs) and guided to identify the project stages of such decisions.
6	What it takes to secure commitments to sustainability.
7	What challenges architects faced in securing decisions/commitment and delivering sustainability, including making or accepting changes to projects that affect its sustainability.
8	Whether sustainability was a problem for them, or for their practice.

Participants were asked about values first entering project discussions, e.g., during either project briefing with clients, or some form of project introduction or presentation where consultants and/or other stakeholders were first meeting and establishing the project's scope and context. Alongside the studied variables, it was also expected to hear architects recount stakeholder's needs, desires, preferences, evaluations, and/or priorities, which would later be important as cross-references of data on values-and-frames content, interactions, effects, and opportunities.

More specifically, knowing the values context through WeValue, semi-structured interviews were then used with questions designed to reveal the human values and communication frames brought to project discussions. Knowing the broader-scale 'discussion frame' would help to show how the ways in which architects conducted their interactions (including personnel, timing, phraseology, etc.) affected the content or outcomes, which were initially unclear and messy. Within each 'discussion frame', the search was for the frames used in communicating sustainability to secure decisions; the role of values was then explored in that context. Because the interrelations between values and frames were initially not known, a series of widely-encompassing questions were asked (see Appendix-3.3) which was designed to reveal a broad range of information about their interactions, later refined as above. To know when opportunities for meaningful choice naturally occur, participants were also asked about how discussions were conducted and their timing. Together, this would provide both discussion content and process. Frames and values were identified as content within a process, then their inter/relationships and effects on decisions, spaces and opportunities examined.

3.4.5 Emergent developments

The case-based grounded approach followed an inductive logic and provided techniques for proceeding from particular facts to general conclusions through a "flexible, emergent and open approach" (Robson, 1993; in Mills, 2013:36), rather than rigid, deductive theory-testing. The methodology introduced how the case logic facilitated justifiable adjustments to the research pathway to account not only for new findings but also any unpredictable or emergent factors. Each study and study-part transitioned with a reflection to examine the implications of findings and record key emergent factors (e.g., Table 61) for potential further study based on theoretical sampling procedures outlined below. For instance, during SS1, it emerged that the focus group could be jettisoned as a group values data generation method based on confirming the level-of-analysis. The focus of the study was, not on the effects of group processes and factors on individuals, but on the dynamic, emergent, contextual, and interpersonal nature of design, framing, and decision-making interactions between architect and stakeholder from the architects' perspective. Thus, reflection on findings and emergent factors at key research stage suggested important concepts requiring further theoretical saturation and facilitated controlled and justified refinements (Yin, 2014) to the research pathway, assessed and approved with the thesis panel.

3.5 Participant selection, 'sampling', and saturation

3.5.1 Sampling types and strategy

Sampling refers to the focused selection of suitable a variety of 'samples', whether examples/exemplars representative of a larger body (e.g., exemplar case in ES3b-ES3c), or theoretical concepts needing further examination towards saturation (§3.5.1.3) (Yin, 2014). Based on case study replication logic (§3.2.5.2), sampling

and its criteria are required to select 'candidates' for examination (*ibid*.) in key parts of the research. Three types of sampling employed in this research are, in order of their invocation, operational construct sampling, participant 'sampling' or selection, and theoretical sampling (Patton, 2002), summarised below.

3.5.1.1 Operational construct sampling

Sampling that is theory-based, such as operational construct sampling, is where "the researcher samples incidents, slices of life, time periods, or people on the basis of their potential manifestation or representation of important theoretical constructs" (Patton, 2002:232). Criteria for sampling were developed from theoretical constructs identified through the literature and research design as facets or components of the research question which can be studied in real-world examples of practice (Patton, 2002). The required constructs were sustainability, values, and frames, as they relate to project decision-making processes. Frames were considered organising devices of human thought and communication; the production of thought and communications constituted the use of frames with which to organise them. It was impossible to know in advance whether someone used another method for organising thought and communication, and therefore relies on past empirical research to make this assumption. The same logic applies to human values and to project decision-making, noting the variables dependencies in §1.2.3. Patton (2002) suggests that informants and participants are by necessity chosen purposefully according to the operational constructs defined by the research questions, as discussed below.

3.5.1.2 Participant selection

Based on the research problem set out in §1.1 and §2, it was originally intended to involve both architects and key decision-making stakeholders, and to focus on those stakeholders most relevant to projects from architects' perspectives. Based on early findings, clients were clearly the most significant stakeholder group. It was then envisaged to include clients as participants, but it became clear during

ES2/§4.3 recruitment that client-consultant confidentiality, lack of access, and willingness to involve their clients were issues for participants. However, participants provided rich, thick descriptions (Ryle, 1971) of their stakeholder interactions, and it became clear that participant's own interpretations were in fact more significant than initially considered; therefore, involving clients became inessential for this research on architects perspectives. Clients remain important foci for future research, with any potential limitations are addressed in §7.4. Thus, participants were chosen based on specific dimensions of the variable of sustainability (Patton, 2002); specifically, by their own self-reported professional approaches to architectural sustainability when invited to participate. If too many respondents to invitation were found to fall into a particular dimension (i.e., architectural approach), then a continued search for other participants would have been triggered. To refine the selection of individuals within a particular stratum, several methods were investigated to select participants for this research: convenience, cluster, purposive, snowball, and systematic selection (Patton, 2002). Whilst all methods were potentially applicable in the context of the variables defined earlier, those ultimately used are discussed in §3.5.2, below.

3.5.1.3 Theoretical sampling and saturation

The term 'theoretical sampling' refers to two different types of abstractions about selection of either study 'participants' based on 'operational constructs', or of previously developed 'theoretical concepts' in need of further data examination/saturation in the research (Yin, 2014). The former is addressed as participant selection, whereas the latter informs the development of theoretical insights and is based on grounded methods (Strauss and Corbin, 1990). This form of theoretical sampling is the pursuit of data to saturate earlier-developed theoretical categories, themes, and concepts, their properties, and dimensions which are in the process of 'maturing' (*ibid*., 1990). Theoretical concept sampling happens once initial data has been generated and is a technique for building

integrated arguments and theoretical statements once initial codes and categories have been developed. This sampling was used throughout with *key emergent factors* used to further study phenomena evaluated in context as theoretically significant and practically impactful therefore worthwhile 'saturating' with further research and theoretical insights. Theoretical sampling and saturation through *theoretical and analytical sensitivity* are used to build abstractions, integrated theoretical statements, and evaluations of rival/alternative explanations (Charmaz, 2006; *ibid*., 1990). *Theoretical saturation* (or convergence) was determined when no new analytical and theoretical insights were gained about the theoretical categories, themes and their properties from, a) re-examining the data, and then b) generating new data (Charmaz, 2006:113). Theoretical insights were saturated when no new patterns, themes, categories, or their properties could be identified (Charmaz, 2006) (see §5.4, §6).

3.5.2 Participant selection strategy

Study participants were initially identified using 'purposive selection' whereby the study needs provided purposes which dictated participant selection from groupings with specific characteristics (Babbie, 2010:193). This required a meaningful selection of architectural practitioners from which results could be analytically generalised to apply to similar practitioners, situations, and cases (not statistically generalised to populations (Yin, 2014); see §3.8). Two main factors of participant selection criteria and recruitment groups are summarised below.

3.5.2.1 Selection criteria

The participants were chosen via combined purposive, convenience sampling for accessibility. All participants have been recruited through pre-existing professional contacts. Organisations were then shortlisted based on, I) practice-type, II) project size/type, with III) at least six professional-level staff. Then organisations were approached and selected when, IV) company leaders were

interested in the research, understood the need for exploration, and indicated they could benefit from participating, and V) they self-identified with any of the three broad architectural approach-types. Individual participants were chosen from those organisations based on, VI) experience with stakeholder interaction, and VII) role in managing stakeholder interactions from project initiation. In practice, this meant participants were south-east UK-based, senior-level project-runners, because junior- or mid-level individuals normally had limited interaction with front-end decision-making stakeholders and were not frequently involved in project initiation and management. For this work, 22 participants from three organisations formed a near-even balance when self-identifying generally as design-, sustainability-, or commercially-orientated.

More specifically, individual participants were selected based on having a minimum of 10-years' professional experience with sustainability issues in building design and construction, plus direct contact with clients, statutory authorities, external design team members (e.g., cost consultants, design engineers), or other decision-influencing stakeholders as described by the informants themselves. These were considered the minimum requirements necessary to ensure sufficient exposure to and experience with external decision-makers in formulating, framing, and actioning sustainability issues. Other factors used to filter informant selection/sampling included: experience in varied mainstream construction industry sectors; exposure to and involvement in sustainability issues in architectural practice; participants' availability and accessibility; and willingness to participate in research of this nature. With the intent of maximising inclusivity, participant age, gender, and ethnicity were not part of the participant inclusion criteria, but provide interesting reference (see Table 33).

3.5.2.2 Recruitment and selection groups

All participants were invited through the researchers' existing professional networks comprised of architectural design and construction professionals built up through many years of UK architectural practice (mainly south-east UK). Key informants have been recruited primarily through two methods: direct solicitation of personal professional contacts; and snowball or 'routed' solicitation and introduction through those contacts, and supervisors.

Table 33 Participant recruitment demographics

Case Grouping	Organisation Type	Specialism, Interest	Total PPTs	Gender x Nos.	Ethnicity x Nos.	Age Groups	Yrs Industry Experience
Pilot Study Group 1	Mixed construction professionals	S: Professional services I: Client and Service-led	10	F x2	BAME x2	35-44 x2	10-20y x2
				M x8	BAME x8	35-44 x6	10-20y x6
						45-54 x2	20-35y x2
Group 2	Architectural Practice	S: Commercial-led I: Design	6	M x6	BAME x1	45-54 x1	20-35y x1
					BRIT x5	35-44 x2	10-20y x1
							20-35y x1
						55-64 x2	+35y x2
						65+ x1	+35y x1
Group 3	Architectural Practice	S: Design & Sustainability-led I: Management	6	M x6	BAME x1	35-44 x1	20-35y x1
					BRIT x5	35-44 x1	10-20y x1
						45-54 x2	20-35y x2
						55-64 x2	+35y x2
TOTALS:	**3**		**22**	**F x2** **M x20**	BAME x12 BRIT x12	**35-44 x12** **45-54 x5** **55-64 x4** **65+ x1**	**10-20y x10** **20-35y x6** **=35y x6**

This recruitment process resulted in twenty-eight people initially being invited to take part from three organisations, called Groups G1, G2, and G3, of which all twenty-eight agreed. Demographic details of the organisations and recruited participants are outlined in Table 33. Three informants in G1 and one in G2 were deemed to have insufficient experience in external-facing roles although had some experience with sustainability issues; therefore, they were not interviewed. The recruitment groupings breakdown of individuals and organisations are outlined in Table 34. Five further sustainability-focused participants from G3 agreed to participate, but because of the existing mix of participants fairly evenly spread across the three approaches, they were not invited to continue. Of the remaining

twenty-two participants, sixteen were interviewed, twelve participated in two evenly spread focus groups, and twelve returned PVQ questionnaires. This generated data for 128 units-of-analysis in twenty-six client-project cases (with three 'cases' from Pilot as individual practitioners, before the case boundaries were subsequently narrowed with G2). The need to generate individuals' values data arose from the review after Pilot Study and transitioning to formal cases studies, and supported by methods design/development process. Accordingly, PVQ values questionnaires were administered to G2-G3 but not pilot group G1, the significance of which was deemed negligible because of the revision to case boundaries.

Table 34 Participant groups, participants, cases, and units-of-analysis

Case Grouping	Total Participants	Interviews	Focus Group Participants	Cases	Units-of-Analysis	Questionnaire Respondents	Phase
Pilot Study Case Group 1	10	4	6	(3)	(3)	NA	Phase 1
Case Group 2	6	6	6	6	24	6	Phase 2-3
Case Group 3	6	6	NA	20	104	6	Phase 4
Totals	**22**	**16**	**12**	**26**	**128**	**12**	

3.5.3 Study setting selections

3.5.3.1 Physical settings

Study settings/venues were best situated and conducted in locations and premises relevant to the study participants to facilitate a more thorough understanding of the prevailing conditions and culture in which their framing and decision-making were undertaken. All participants were interviewed in their own offices and these conditions were replicated for each participant in a group, so each was interviewed in their own surroundings. It was anticipated that familiar settings would allow practitioners to be more relaxed and respond more freely than they might in public settings like cafés. Interviews throughout were conducted in their offices' meeting rooms, which facilitated suitable conditions for interviews and their audio

recordings. Both focus group values workshops were conducted in the workplaces of the participants. The first workshop for Pilot Study Group 1 was conducted in a meeting room to facilitate the learning and 'listening' process as a pilot to gain maximum effectiveness for the study to identify any issues in the process, as well as the content. The second workshop was undertaken in the open-plan workspace of Group-G1 on a large central meeting table. Both groups received the PVQ values questionnaires at the start of the WeValue focus group workshop to capture individual values.

3.5.3.2 *Temporal setting*

Temporally in the project lifecycle, informants were first asked to discuss their experiences in the preliminary stages of project inception and design briefing. This is commonly seen as the timeframe in which the greatest project impacts are made with the least penalties as the project develops from idea to artefact(NIBS, 2012), illustrated in Figure 17.

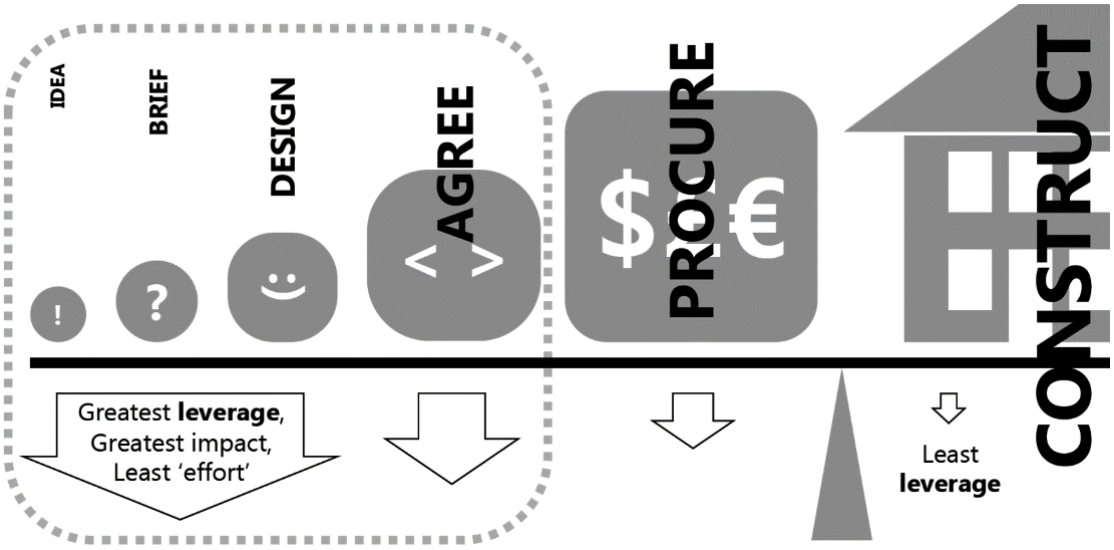


Figure 17 Outcome Leverage by Project Stage, developed from Whole Building Design Guide (NIBS, 2012)

Whilst the original temporal focus was the pre-construction design stages, pilot study findings identified that early-stage design decision-making outcomes required examination to ascertain the results of their initial interactions, framing and decision-making. Unexpectedly, most informants naturally recounted

numerous instances where key interactions affecting sustainability framing and decision-making continued during not only pre-construction design, but also significantly during construction. This significance of this unforeseen development is examined through Chapter 4-5.

3.5.4 Triangulation

Cross-comparison or 'triangulation' (Yin, 2014) 'internally' was employed for participant-types and construct-types (as above) to gain alternative perspectives and improve validity of theoretical insights. The purpose of 'internal' triangulation was to obtain a broad but recognisable sample of views which could be compared and contrasted using industry- and discipline-recognised characterisations (Jamieson *et al*., 2011; Hill *et al*., 2010; Golden, 2017). Any theoretical insights generated are later triangulated 'externally' with existing literature in Chapters 6. More specifically, internal triangulation was used within and across data by generating and analysing three different perspectives from the three aforementioned participant groups by architectural approaches. The research began by generating data from individuals in groups based on these three perspectives, however it subsequently emerged that although organisationally the groups identified in one way, the individuals demonstrated through interview that they had similar but sometimes varying or even divergent individual approaches to their organisations. This unexpected development is reflected in Chapters 4-5.

3.6 Analytical framework

The previous sections have sequentially described key components building up to the analysis design (Table 35) and analytical framework (Table 37). This framework included developing a strategy, and examining and evaluating field-, construct-, and research problem-specific analysis methods, outlined in Figure 18

below and described in the following section, then compiled and operationalised into a data analysis plan below.

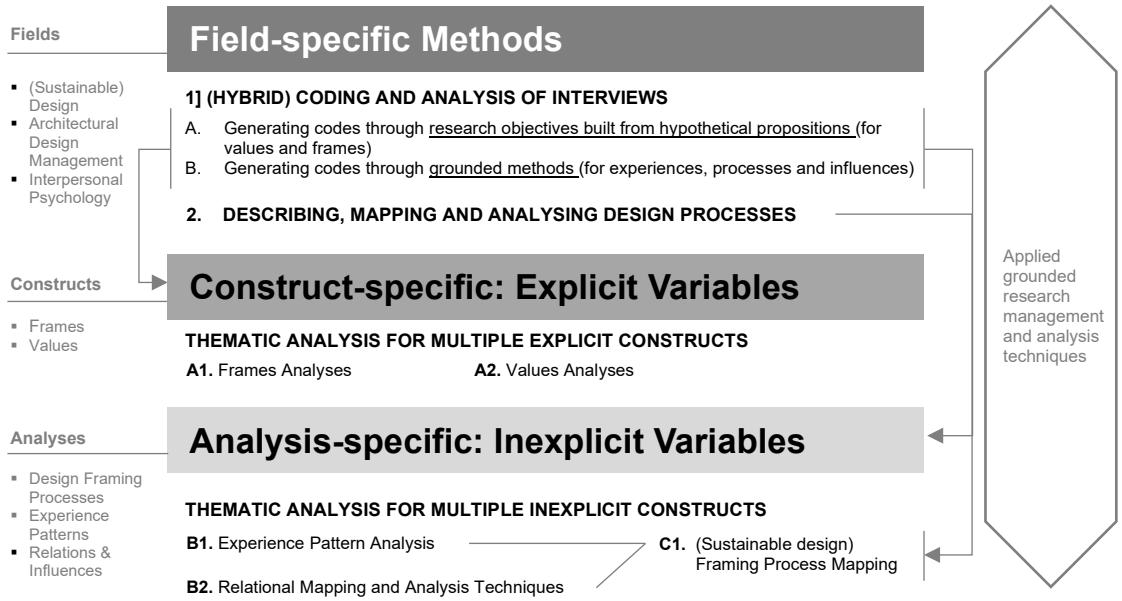


Figure 18 Analysis methods adopted as associated with their analytical levels in the research

Table 35 Analysis Design Matrix: Analysis levels, logic, requirements, and purposes

Analysis levels		Logic*	Requirements for analysis methods	Selected analysis methods and their purposes
1	Variables initially identified from literature of values and frames	Deductive-theorised strategy	Coding and analysis all data for variables of values and frames	**Thematic Analysis**, initial coding based on deductively theorised 'constructs' of frames and values; Thematic concept & relationship mapping (see also §3.7).
2	Inexplicit and unclear processes and influences	Inductive-grounded strategy	Coding, mapping, & analysis of all data: inductively generating codes and employing forms of mapping, analysing, and describing design framing processes and their relationships & influences (towards abduction)	**Thematic Analysis**, Inductively 'open' coding for framing and decision-making processes, influences, relationships; Design/framing process mapping; TA sub-techniques of Experience Pattern Analysis and Relational Analysis (see also §3.8).
3	Abstracted yet integrated theoretical statements; Evaluation of alternative explanations and pursuing the most plausible	Abductive-abstracted strategy	Qualitative 'meta-level' interpretation and/or integration / synthesis of Level 1 deducted variables of values and frames; and Level 2 inexplicit processes and influences	**Thematic Analysis** with constant comparison, theoretical sampling towards saturation through theoretical and analytical sensitivity** to build abstractions, integrated theoretical statements, alternative explanations and their evaluations toward closing the loop of analytical logic by abduction from empirical findings derived from the data to the most plausible explanations.

** Logic linking data to propositions and vice-versa (Yin, 2014:35-36)*

*** Analytical sensitivity in this research refers to the capacity to notice subtleties and nuances in the data through attention to what key informants are saying and why. Analytical sensitivity was employed in the recognition of meaning in multiple layers for the informant, for the building project, analytically for the research, and its relative importance in the surrounding context as transcribed.*

3.6.1 Analytical framework

The analysis design was compiled into a summary analytical framework in Table 36, below. Case Study Methods acted not only as a research structuring tool but also can use multiple qualitative analysis methods alongside those developed specifically for Case Study Research to enhance validity and reliability (Yin, 2014). Several levels of the framework are associated with and designed in response to field-specific, construct-specific, and problem-specific analytical demands, shown diagrammatically in Figure 18.

As the main data analysis method, the research used grounded Thematic Analysis as Braun and Clarke (2006) and Charmaz (2006) to inductively generate empirically-grounded observations from the data. The combination of case study methods (Yin, 2014) and thematic analysis backbone permitted building empirically-grounded theoretical insights by adopting standard grounded techniques of constant comparison; theoretical sampling; data and theoretical sensitivity and saturation; and iterative inductive-deductive-abductive cycle (Figs. 5 & 21). Thus, theoretical insights are inductively 'grounded in' or closely representing specific instances of data described by patterns found across data (Strauss and Corbin, 1998; Charmaz, 2006). This method was used for drawing out patterns and relationships, codes, themes, categories, and representative insights from generated data. Memoing was employed for note-taking and technique aiding insights and analytical refinements (Charmaz, 2006). Together these helped to form a chain-of-evidence (Yin, 2009) linking data instances and situations to early observations, conceptualisations, and ultimately to grounded theoretical insights.

Thus, owing to a desire to 'let the data speak for itself' (Charmaz, 2006) as much as possible, this research used the constant comparison method (Fram, 2013) to repeatedly compare and contrast newly developing insights with previously-

generated data, memos, and later literature appropriate to research phase and emerging concepts. Borrowed from grounded theory, the constant comparison method (Figure 20) has been employed as an underlying, analytical and research management technique to promote rigour, cohesion, and validity into first-order explanation-building, second-order theory-building, and subsequent analytic generalisation (Yin, 2014). It has also proven useful to promote theoretical sensitivity, situational awareness, and structural orientation (*ibid*., 2006; 2014), alongside a newly-conceptualised 'responsive, adaptive perspective-scaling technique' (Figure 19) to maintain perspective and help prevent fixation on detail or premature explanations.

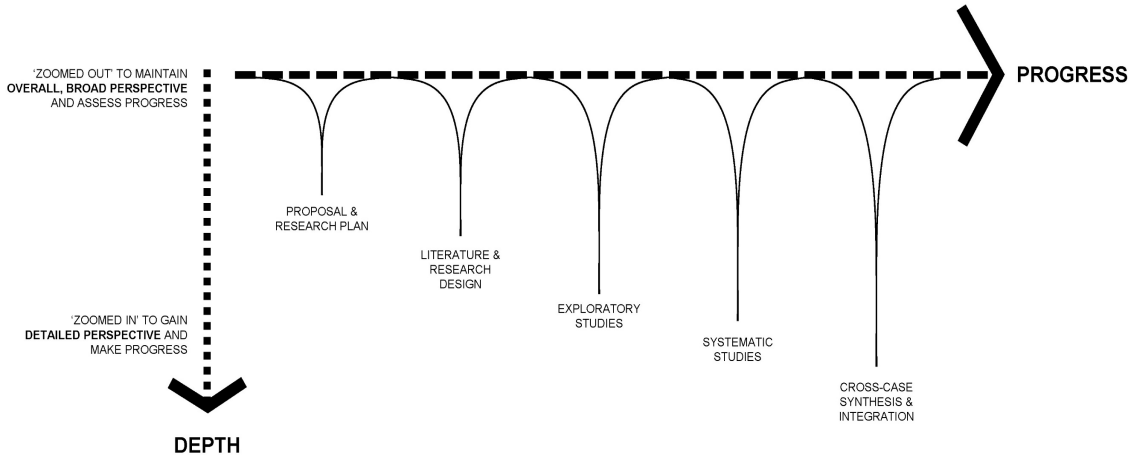


Figure 19 Adaptive-responsive perspective scaling: 'zooming in' at each research stage to gain detailed perspective and make progress, 'zooming out' to maintain overall perspective and assess progress.

The logic of a deductive-inductive-abductive cycle (Strauss and Corbin, 1998; elaborated by Charmaz, 2006) was employed in multiple successions (Figure 21, Table 36). Specific supporting analytical techniques supported the main methods for targeted purposes: A) sustainability framing and decision-making process mapping, and two thematic analysis sub-techniques of: B) experience pattern analysis (effectively thematic analysis with the lens of experience patterns (Aronson, 1994)), and C) relational mapping and analysis (Carley, 1993). Three cross-case techniques used (as Yin, 2014) were: D) Pattern Matching, E) Rival Explanations Examination and, F) Replication Logic, with purposes outlined in Table 37.

Table 36 Deductive-Inductive-Abductive loop

Logic	Description
Deductive-theorised leg	Specific theories about observed human phenomena derived *deductively* from a broader general theories (Creswell, 2007). Deductively derived generalisations formed without inductive checking through constant comparison run the risk of a biased 'massaging' of both theory and data to fit each other which ultimately might not fit any sets of data in the process (Borgatti, 2005).
Inductive-grounded leg	To build generalisations *inductively* from collections of actual observed phenomena and therefore are able to explain the very phenomena they observe. Inductively derived generalisations are 'built from the ground up'; the generalisations describe at least one set of data perfectly and (theoretically) could describe other similar conditions and other similarly derived sets of data (Borgatti, 2005).
Abductive-abstracted leg	The deductive-inductive loop is closed abductively through inference to the best explanation which, if true, would hold for and explain the evidence (Charmaz, 2006). "In brief, *abductive inference* entails considering all possible theoretical explanations for the data, forming hypotheses for each possible explanation, checking them empirically by examining data, and pursuing the most plausible explanation" (Charmaz, 2006:104). For a graphical representation of this process as it occurred in this research, please see Figures 20-21. Thus, if the theoretical insight does not match reality it must be revised or discarded for another plausible explanation given the data and conditions within which the explanations are made. Alternative explanations generated in this process are included in Appendix 6.

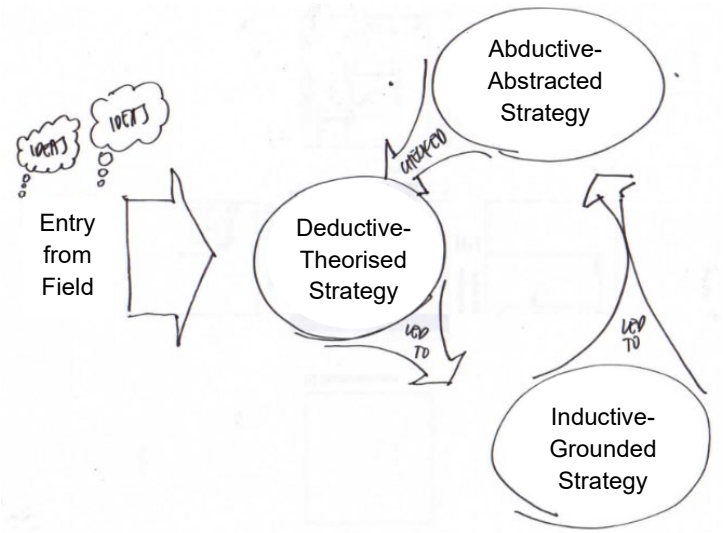


Figure 21 Tri-partite analytical strategy

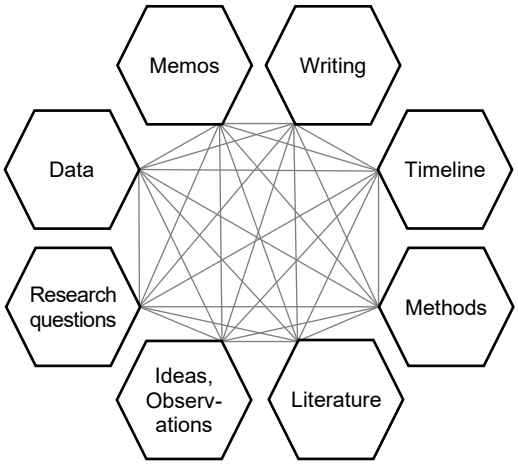


Figure 22 Constant comparison method

Figure 20 (below) Inductive-Deductive-Abductive loop using grounded theory methods (after Strauss and Corbin, 1998; Charmaz, 2006; and Borgatti, 2005; Creswell, 2007).

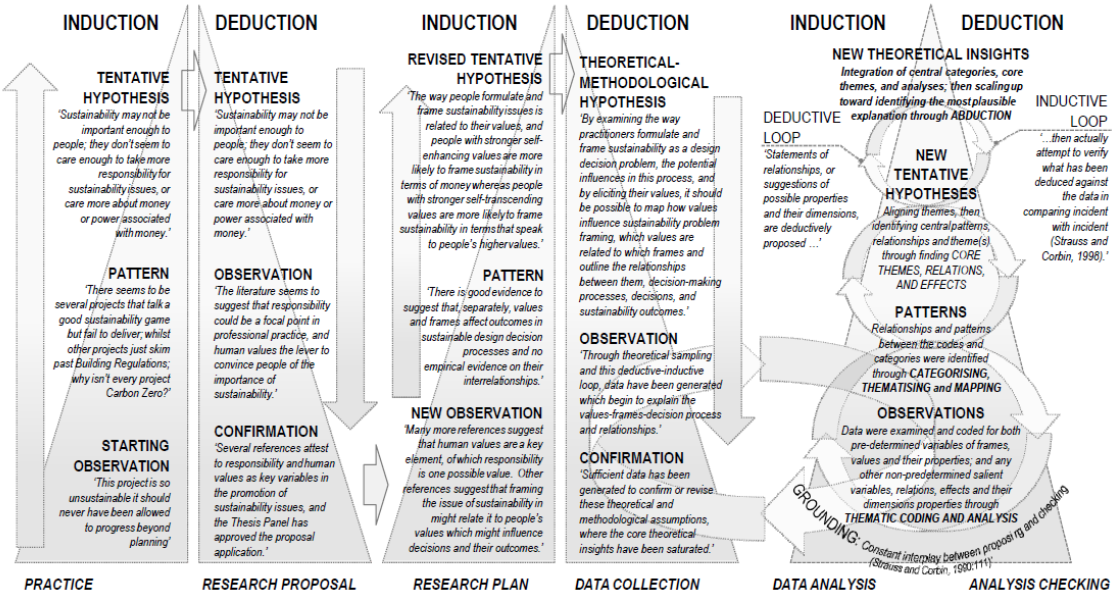

INDUCTION
DEDUCTION
INDUCTION
DEDUCTION
INDUCTION
DEDUCTION
TENTATIVE HYPOTHESIS
'Sustainability may not be important enough to people; they don't seem to care enough to take more responsibility for sustainability issues, or care more about money or power associated with money.'
PATTERN
'There seems to be several projects that talk a good sustainability game but fail to deliver; whilst other projects just skim past Building Regulations; why isn't every project Carbon Zero?'
STARTING OBSERVATION
'This project is so unsustainable it should never have been allowed to progress beyond planning'
TENTATIVE HYPOTHESIS
'Sustainability may not be important enough to people; they don't seem to care enough to take more responsibility for sustainability issues, or care more about money or power associated with money.'
OBSERVATION
'The literature seems to suggest that responsibility could be a focal point in professional practice, and human values the lever to convince people of the importance of sustainability.'
CONFIRMATION
'Several references attest to responsibility and human values as key variables in the promotion of sustainability issues, and the Thesis Panel has approved the proposal application.'
REVISED TENTATIVE HYPOTHESIS
'The way people formulate and frame sustainability issues is related to their values, and people with stronger self-enhancing values are more likely to frame sustainability in terms of money whereas people with stronger self-transcending values are more likely to frame sustainability in terms that speak to people's higher values.'
PATTERN
'There is good evidence to suggest that, separately, values and frames affect outcomes in sustainable design decision processes and no empirical evidence on their interrelationships.'
NEW OBSERVATION
'Many more references suggest that human values are a key element, of which responsibility is one possible value. Other references suggest that framing the issue of sustainability in might relate it to people's values which might influence decisions and their outcomes.'
THEORETICAL-METHODOLOGICAL HYPOTHESIS
'By examining the way practitioners formulate and frame sustainability as a design decision problem, the potential influences in this process, and by eliciting their values, it should be possible to map how values influence sustainability problem framing, which values are related to which frames and outline the relationships between them, decision-making processes, decisions, and sustainability outcomes.'
OBSERVATION
'Through theoretical sampling and this deductive-inductive loop, data have been generated which begin to explain the values-frames-decision process and relationships.'
CONFIRMATION
'Sufficient data has been generated to confirm or revise these theoretical and methodological assumptions, where the core theoretical insights have been saturated.'
NEW THEORETICAL INSIGHTS
Integration of central categories, core themes, and analyses; then scaling up toward identifying the most plausible explanation through ABDUCTION
DEDUCTIVE LOOP
'Statements of relationships, or suggestions of possible properties and their dimensions, are deductively proposed …'
INDUCTIVE LOOP
'…then actually attempt to verify what has been deduced against the data in comparing incident with incident (Strauss and Corbin, 1998).'
NEW TENTATIVE HYPOTHESES
Aligning themes, then identifying central patterns, relationships and theme(s) through finding CORE THEMES, RELATIONS, AND EFFECTS
PATTERNS
Relationships and patterns between the codes and categories were identified through CATEGORISING, THEMATISING and MAPPING
OBSERVATIONS
Data were examined and coded for both pre-determined variables of frames, values and their properties; and any other non-predetermined salient variables, relations, effects and their dimensions properties through THEMATIC CODING AND ANALYSIS
GROUNDING: Constant interplay between proposing and checking (Strauss and Corbin, 1990:111)
PRACTICE
RESEARCH PROPOSAL
RESEARCH PLAN
DATA COLLECTION
DATA ANALYSIS
ANALYSIS CHECKING

Table 37 Analytical framework

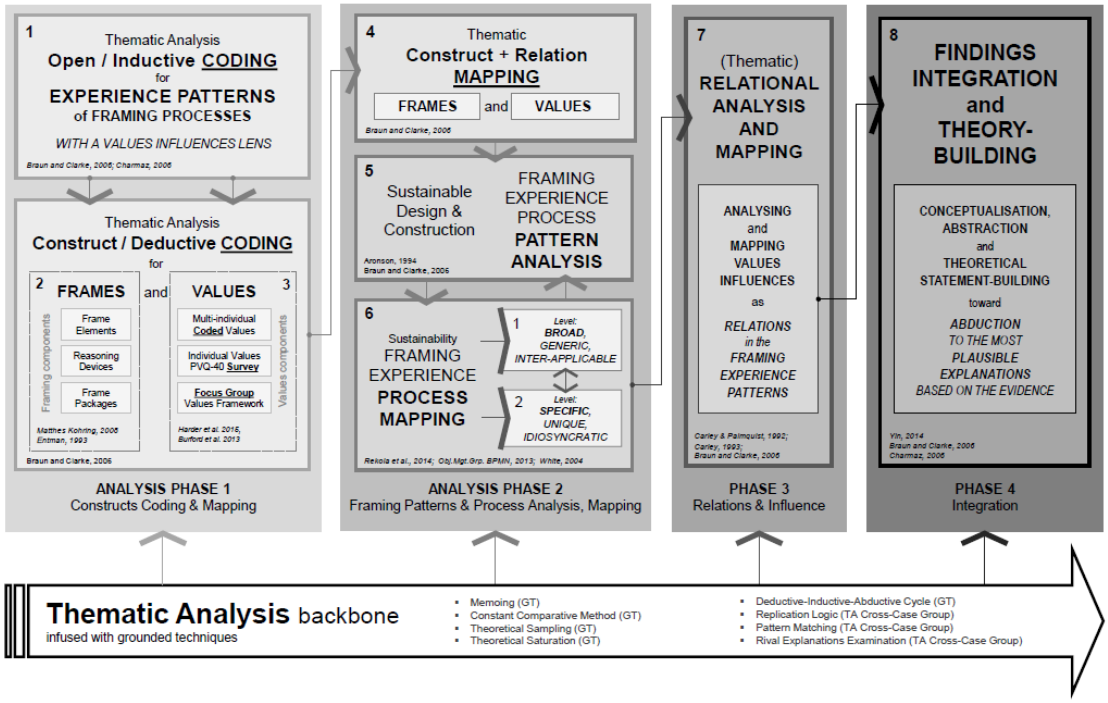
Method	Theoretical Tradition/ Epistemological basis	Purpose	Authors
MAIN METHODS			
Case Study	Pragmatic Constructionism	**Main qualitative research method** to organise and direct the data collection and analysis.	Yin, 2009, 2011; 2012; 2014
Thematic Analysis (TA) method of coding, analysis, and building theoretical insights	Thematic Analysis in a latent contextualist tradition which embraces pragmatic relativism recognising constructionism	Qualitative data analysis method to code and analyse transcribed interview responses for *latent and contextualised meaning* and potential and/or tacit patterns (see also Figure 23 below)	Braun & Clarke, 2006; Yin, 2014; Saldaña, 2009; Strauss & Corbin, 2009
Constant Comparative Method	Symbolic Interactionism (of Grounded Theory)	Supporting qualitative research method to promote rigour, cohesion and validity into first-order explanation-building, second-order theory-building, and subsequent theory 'up-scaling' and transferability.	Strauss & Corbin, 2009; Fram, 2013
SUPPLEMENTAL ANALYTICAL TOOLS and TECHNIQUES applied in and to Thematic & Map Analyses			
Framing and decision-making process mapping	Organisational behaviour and management; decision theory; design; operations and process management	Analytical and visual method to systematically map and analyse framing and decision-making processes as a specific strand of the design process; used as both broad first level and detailed second level mapping.	Girod, *et al.*, 2003; Hansen and Andreasen, 2004; Rekola *et al.*, 2014
Experience Pattern Analysis, Pattern Matching	Thematic Analysis technique and Case Study Method	Analytical process to systematically identify, examine, and then later visually map relations, patterns, and processes of experience as interaction sequences (as explained by each participant) to capture the values and frames interactions and the influence-components therein. Used to analyse, compare, and contrast patterns identified between: 1) the **values** derived from the three data sources, 2) the **frames** derived from interviews and analysed as above, 3) any influences identified, and 4) any emergent patterns.	*Identifying patterns of experience in TA*: Aronson, 1994; *Pattern Coding*: Girod, *et al.*, 2003; Miles and Huberman, 1994 *Pattern Matching*: Yin, 2009, 2011;
Relational Mapping and Analysis	Thematic Analysis technique	Analytical process to systematically identify examine, and then visually map patterns	Carley and Palmquist (1992); Carley (1993)
Thematic Concept Mapping	Thematic Analysis technique and qualitative data structuring technique	Visual diagramming process similar to Mind Mapping techniques used alongside other analysis methods and techniques to iteratively and systematically visualise and explain a variety of phenomena including concepts, processes, interactions, patterns, relationships and influences;	
CROSS-CASE and CROSS-GROUP ANALYTICAL TECHNIQUES			
Replication Logic	Case Study Method	Repeat or replicate the above methods and techniques to develop cross-case equivalency	Yin, 2009, 2012, 2014;
Pattern matching	Case Study Method	Identify and evaluate patterns both within-case and cross-cases	Yin, 2009, 2012, 2014;
Rival Explanations Examination	Case Study Method	Construct and test rival explanations both within-case and cross-cases	Yin, 2009, 2012, 2014;

Rival Explanation testing was used to form rival or alternative explanations in developing and evaluating theoretical statements both within- and cross-case (Yin, 2014) (see appendix-6). *Pattern Matching* was used to identify within-case and cross-case patterns, using the patterns and relationships identified in earlier in-case analyses (it is also functionally very similar to experience pattern-mapping technique of TA) (Yin, 2014). This helped to identify micro-, meso-, and macro-level patterns happening in specific interactions at specific times in a unit-of-analysis, project-case and across cases. *Replication Logic* was used to repeat or replicate the methods and techniques to develop cross-case equivalency (Yin, 2014) (see also §3.4, §3.8). The analytical framework is outlined in Table 37. Consequently, this framework was built from the ontological and epistemological scaffolding and completes the research design pyramid, shown in Figure 11. The analytical framework is recompiled into a Data Analysis Plan and procedure outlined below.

3.6.2 Data analysis plan

Based on the above design and methods, a Data Analysis Plan was devised to analyse the data in four key stages to achieve the analytical and methodological goals and ensure reliability and replicability. Represented graphically in Figure 23, it incorporates a procedure with specific steps in phases to progress data analyses broadly sequentially for the variables, associations, and processes sought in each participants' case building up units-of-analysis embedded in each case.

Figure 23 (below) Analytical Framework Outline Procedure/Process and Phasing Diagram


1
Thematic Analysis
Open / Inductive CODING
for
EXPERIENCE PATTERNS
of FRAMING PROCESSES
WITH A VALUES INFLUENCES LENS
Braun and Clarke, 2006; Charmaz, 2006
Thematic Analysis
Construct / Deductive CODING
for
2
FRAMES
and
VALUES
3
Framing components
Frame Elements
Reasoning Devices
Frame Packages
Matthes Kohring, 2006
Entman, 1993
Multi-individual Coded Values
Individual Values PVQ-40 Survey
Focus Group Values Framework
Values components
Harder et al. 2016,
Burford et al. 2013
Braun and Clarke, 2006
ANALYSIS PHASE 1
Constructs Coding & Mapping
4
Thematic
Construct + Relation
MAPPING
FRAMES
and
VALUES
Braun and Clarke, 2006
5
Sustainable Design & Construction
FRAMING EXPERIENCE PROCESS
PATTERN ANALYSIS
Aronson, 1994
Braun and Clarke, 2006
6
Sustainability FRAMING EXPERIENCE
PROCESS MAPPING
1
Level:
BROAD, GENERIC, INTER-APPLICABLE
2
Level:
SPECIFIC, UNIQUE, IDIOSYNCRATIC
Rekola et al., 2014; Obj.Mgt.Grp. BPMN, 2013; White, 2004
ANALYSIS PHASE 2
Framing Patterns & Process Analysis, Mapping
7
(Thematic)
RELATIONAL ANALYSIS AND MAPPING
ANALYSING and MAPPING VALUES INFLUENCES as
RELATIONS in the FRAMING EXPERIENCE PATTERNS
Carley & Palmquist, 1992;
Carley, 1993;
Braun and Clarke, 2006
PHASE 3
Relations & Influence
8
FINDINGS INTEGRATION and THEORY-BUILDING
CONCEPTUALISATION, ABSTRACTION and THEORETICAL STATEMENT-BUILDING
toward
ABDUCTION TO THE MOST PLAUSIBLE EXPLANATIONS BASED ON THE EVIDENCE
Yin, 2014
Braun and Clarke, 2006
Charmaz, 2006
PHASE 4
Integration
Thematic Analysis backbone
infused with grounded techniques
Memoing (GT)
Constant Comparative Method (GT)
Theoretical Sampling (GT)
Theoretical Saturation (GT)
Deductive-Inductive-Abductive Cycle (GT)
Replication Logic (TA Cross-Case Group)
Pattern Matching (TA Cross-Case Group)
Rival Explanations Examination (TA Cross-Case Group)

3.6.3 Data analysis summary procedure

Using the coding methods in Table 37, procedure outlined in Figure 23, interviews were transcribed verbatim and then coded and analysed line-by-line using grounded Thematic Analysis (gTA) according to Braun and Clarke (2006, 2012), Saldaña (2012) on coding, Charmaz (2006) and Corbin and Strauss (1998) on grounded theory (GT). Frame analysis followed Entman (1993); David *et al*. (2011); and Matthes and Kohring (2008), with the search for patterned clusters of frame elements (Figure 24) and refinements noted in §4.4.3. Values analyses of transcripts followed gTA procedures; analysing PVQ surveys followed Schwartz (2010); whereas focus groups produced group values frameworks following the WeValue method (Burford, 2013; Harder, 2015).

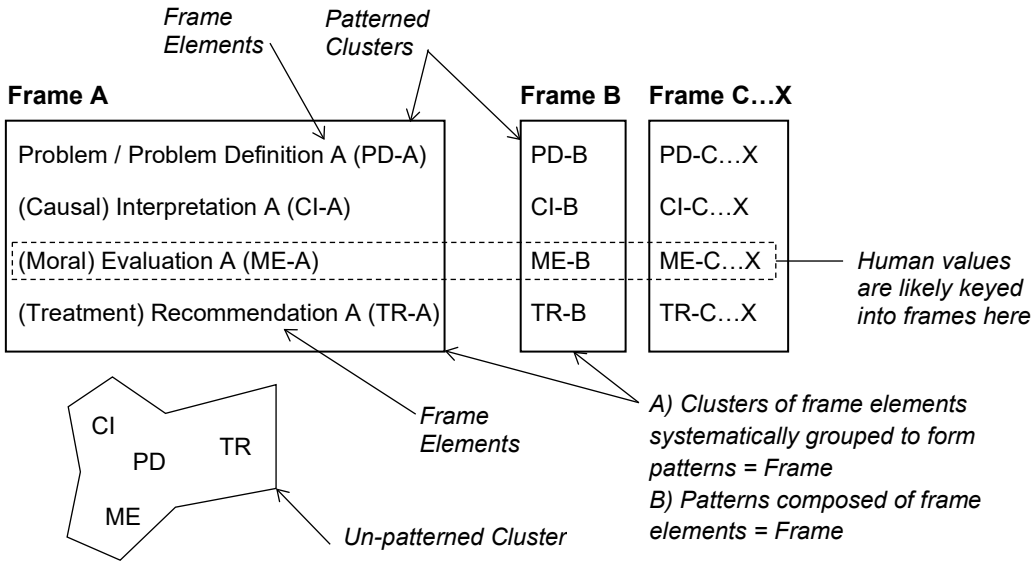


Figure 24 Frame analysis as patterned clusters of frame elements (after Entman, 1993; and Matthes & Kohring, 2008)

Numerous examples of coding are provided throughout the findings chapters alongside associated 'data slices'. As there is no standard approach for identifying and following values through a discussion whilst identifying and tracking frames and their interrelationships, the development of an appropriate method was based on the established methods of GT, TA, TA sub-methods of relational mapping and analysis and experience pattern analysis, and GT's constant comparison (Charmaz,

2006; Fram, 2013) and informed by BPMN (see §3.7, MA2-MA4). To accurately evaluate and later theorise natural but disorderly patterns, it became necessary to develop and support the analyses with philosophical logic (Guttenplan, 1997; Grayling, 2001) by establishing valid inferential pathways through reasoning of links between variables both logically and naturally (see also Table 39).

Because the need was to explore the influence of values and frames in not only the design decision-making process but also potentially the whole decision-making process, many broad-scoped and open-ended questions were initially asked. Exploratory interviews were sometimes sprawling, which made it challenging to immediately and straightforwardly pinpoint influences of values and frames through transcript coding. This meant that information about one project/client was sometimes provided as answers to several questions and spread throughout an interview. This also meant that occasionally the evidence for one architect-client case (by project) was incomplete. This was because, a) at that early research stage it was not initially known precisely how to best generate data to provide evidence for this study's variables and their influences; and b) responses were varyingly broad, generalised, or specific. This made finding consistent patterns between them occasionally difficult. Therefore, in addition to thematically analysing for the variables, different approaches were developed and auditioned to understand the relations between variables and their sequencing, thus outlined in Figure 23. Once the transcripts were thematically analysed, sequencing and then mapping the analysed data was successfully trialled, 'constantly comparing' against transcripts for validity. This would then depict the values influence pathways via frames over time, thus illustrating locations of, and contributions to, meaningful choice (see MA2-4). The mapping method is summarised below, and the findings present results from the most successful trials.

3.7 Concept diagramming and process mapping

Mapping methods respond to the need for analysing BD&C decision-making processes and influences through various forms of describing, diagramming, mapping/modelling, and analysing the courses of action and interactions in designing and in this research also procuring and constructing buildings. The methods reviewed included: Design Process Descriptive Analysis (Rekola *et al*., 2012) using an open-source 'Business Process Modeling Notation (BPMN)' (sic.) mapping technique; Descriptive Process Modelling (Koskela *et al*., 2002); Concept Mapping (Alharbi *et al*., 2015; Kinchin *et al*., 2010); relational mapping and analysis (Carley, 1993; Carley and Palmquist, 1992; Navenec and Hirst, 2009); and Design Protocol Analysis (e.g. Dorst and Dijkhuis, 1995; Suwa *et al*., 1998). Parallels can be drawn between the diagramming techniques these authors outline, the conceptual diagramming techniques (e.g., concept mapping) discussed in grounded methods (Strauss and Corbin, 1998; Charmaz, 2006), and the thematic mapping techniques discussed in Thematic Analysis methods (e.g. Boyatzis, 1998; Braun and Clarke, 2006) (see Appendix-4). Process 'modelling' involves creating idealised models of processes rather than post-hoc process analysis and is therefore inappropriate, as is Design Protocol Analysis for in-situ analyses of designers-in-action. Thus, concept mapping, design process and relational analysis and mapping were the most directly relevant and useful to map and analyse values and frames influences in the framing and decision-making process, thence taken forward into the field, as detailed in Appendices 3-4.

To reliably replicate the mapping method and establish relationships and patterns initially identified in the first 6 cases during concept mapping study MA2 with Group 2 for later refinement in MA3 and MA4 with Group 2 and 3 (Table 38), all analysis instruments were first employed. Refinements and developments were necessary in process mapping and analysis to account for all the interactions participants recounted in their projects, rather than only the narrow window of

influences principally during initial phases or later critical challenges. In brief, the multi-step process to analyse and map the problem-framing and decision-making process involved: interview coding; analysis matrix processing/development; initial pattern analysis; iterative mapping trials; pattern analysis checking; final mapping and analysis method with forward/reverse relational analysis and logic assessments. The values basis of decision-making was, in summary, established through: frames' thematic content analysis for values; pattern analysis/matching and checking against informant observations; then relational analysis to establish impact/influence.

Table 38 Map development by Study and location in Appendix

Study	Sect.	Appendix
ES1/MA1	§4.2.2	Appendix-4.1
ES2/MA2	§4.3.4	Appendix-4.2
ES3/MA3	§4.4.2	Appendix-4.3
SS2/MA4	§5.3.1	Appendix-5.1

For this research, the importance and utility of graphical mapping to depict complex configurations and their interconnections cannot be overstated (see Appendices 4.1-4.3). Three forms of diagramming and mapping techniques were used sequentially in layers: thematic/concept mapping, framing/design process mapping, experience patterns and relation/influence mapping and analyses. These were needed to 'sense-make' and 'unpack' contextualised, layered, and sometimes non-uniform participant responses of complex, dynamic, temporally-extended experiences to interactions to show their relationships, effects, and significance. Experience patterns were more specifically analysed for the process of framing sustainability, first as a design decision-problem and later in any form, according to the outline suggestions made by Aronson (1994) and TA. These analyses were recorded through the analysis matrices and process maps. The method later developed alongside needs identified in Exploratory Studies, refined in ES3/MA3 and finalised with additional analysis in SS2/MA4, listed in Table 38. Throughout the maps and associated findings, key abbreviations are used. The variables of values, frames, and decisions or decision-making are abbreviated as (V), $[F]$, $[\![DM]\!]$,

respectively. Their relationships are represented with arrows like $(V) \Leftrightarrow [F] \rightarrow [\![DM]\!]$ in equation forms, read left-to-right.

3.8 Research quality and attainment criteria

From an early stage in the research planning, an acute awareness of the need for research quality and rigour led initially to two sources: Creswell's broad list of quality checks and validation methods (Creswell, 2007), and Yin's (2009) four criteria for judging case study quality. During the research and analysis design, further literature was consulted to expand the armoury of tools for quality and rigour with which to conduct and assess the research (e.g., Morse *et al.*, 2002; Onwuegbuzie and Leech, 2007; LeCompte and Goetz, 1982). Accordingly, the criteria for judging the quality and rigour of this research (§3.8.1) have been refined and updated from the research planning stage. Two further categories provide criteria for interpreting the case study findings (§3.8.2) and judging case study achievement (§3.8.3). These are outlined in Table 39 and examined in turn.

Table 39 Research quality tests and attainment criteria

Category	Table below	Tests and Criteria	Appendix-3.2 location
Rigour through Accuracy	Table 40 and Table 43	Validity	§2.1
		Threats to Validity	§2.1.1
		External Validity	§2.1.2
		Construct Validity	§2.1.3
		Internal Validity	§2.1.4
Quality through Replicability	Table 41 and Table 42	Reliability	§2.2.1
		Replicability	§2.2.2
		Generalisability and Transferability	§2.3
Interpretation criteria	Table 44	Criteria 1: Relational significance	§3.1
		Criteria 2: Rival Explanations	§3.2
Achievement Criteria	Table 45	Criteria 1: Purpose, Research questions	§4.1
		Criteria 2: Exemplary Study	§4.2

The purpose of quality planning and checks in case study research is to design and assess the definition, application, and consistency of logic across the design, conduct, and interpretation of the research, ultimately to promote scientific rigour,

authenticity, and value (Yin, 2014; Creswell, 2007; LeCompte and Goetz, 1982). In essence, it is also a form of due-diligence check that the research is, a) 'fit-for-purpose', b) conducted in accordance with its aims and objectives, c) delivers outcomes congruent with them (i.e., seeks to answer the questions asked, and if divergent explained how and why), and d) avoids manipulating variables (LeCompte and Goetz, 1982). Without these, the lack of rigour and quality can lead to poor science divorced from the data and the situated social reality studied, lacking utility (Morse *et al*., 2002), credibility (Onwuegbuzie and Leech, 2007; LeCompte and Goetz, 1982), and, by extension, impact.

Verification strategies for ensuring quality and rigour were employed during research design, its implementation, and completion phases (Morse *et al*., 2002). Historically this has not always been the case, with researchers failing to take full responsibility for rigour and quality in their research (*ibid*.). Such responsibility is taken seriously in this research, first, through an initial quality and rigour verification strategy introduced at Research Plan stage; second, when refined to account for research progress and refinements; then implemented throughout and recorded in study reflections. The strategy, rationale for its employment, and its refinements are discussed below.

Rigour and quality manifest in terms of accuracy and replicability, addressed through strategies and tests for validity and reliability, respectively (LeCompte and Goetz, 1982): "[w]hile reliability is concerned with the replicability of scientific findings, validity is concerned with the accuracy of scientific findings (1982:32)". Both reliability and validity, and are key measures of research quality (Yin, 2014) and rigour (LeCompte and Goetz, 1982). Therefore, both internally and externally reliable and valid research are two of the three main sets of criteria for quality and rigour adopted in this research. Strategies for managing reliability and validity (Morse *et al*., 2002) and tests for checking them (Yin, 2014) used in this research

are summarised in §3.8.1. The third set of criteria regards the applicability of research and findings to other situations in the professional community and broader field, whereby this research aims for transferability not generalisability.

3.8.1 Judging research quality and rigour

'Designing in' research quality was a multi-faceted endeavour comprised of several parts. Based on the qualitative methodological sources previously mentioned, four main criteria were used for managing then judging the rigour and quality of research. According to case study methods, rigour can be judged through accuracy which regards issues of validity and threats to validity (Yin, 2014), addressed specifically in Table 40. This research is rigorous in its depth (rather than breadth across populations) by examining each case in rich descriptive detail, by identifying patterns within and across cases, and offering plausible explanations for the patterns and effects found.

Research quality can be assessed in two forms: through replicability addressed through reliability; and applicability addressed through the 'generalisability of analyses' and 'transferability of findings' (Yin, 2014). Because of the studied phenomena, exploratory nature, and participant sampling, this research aimed for *analytic generalisation* of theoretical insights to found themes and categories, and *transferability* of findings and theoretical insights to similar situations rather than generalisability to populations. As previously introduced, three strategies of research management have been adopted to ensure the criteria identified for quality and rigour were adhered to and tests for them successful: GT's constant comparison (Figure 22) (and continual questioning), adaptive-responsive perspective scaling (Figure 19), and lenses of inclusion/exclusion (Figure 14). Validity tests and their criteria are summarised in Table 39 and further detailed in Appendix-3.4. Key points on analytical generalisations are summarised in Table 41-Table 42.

Table 40 Research quality criteria for Rigour: Validity and Threats to Validity

Criteria	Criteria description	Application / checks (how aimed to be achieved)	
Validity	Ensuring and verifying accuracy in case study research required 'positively' encouraging its validity and 'negatively' assessing any threats to that validity (Yin, 2014). Case study logic can be threatened by confounding factors or unrecognised changes arising in the conduct of the research; these *threats to validity* were *managed* and *tested* through several controls and assessments of the logic of the case study design and conduct, as below.		
Threats to Validity	Two strategies to manage threats to validity were applied; first, on a *context-dependent basis* (i.e., in the research design, operationalisation, and analysis and interpretation (Onwuegbuzie and Leach, 2007; Yin, 2014)); and second, as underlying and *iterative management techniques*.		
	Context dependent management of validity:	*External validity* checks; see below *Construct validity* checks; see below & Table 43 *Internal validity* checks; see below	
	Underlying and iterative threat management techniques:	Constant comparison and continual questioning Adaptive-responsive perspective scaling Lens of inclusion/exclusion	
External Validity	*External validity* regards the research design and its conduct to be congruent with that design, achieved through assessment of domain applicability and replication logic, as below.		
	Domain applicability: External validity involved "defining the domain to which a study's findings can be generalised (Yin, 2014:46)", which estimates how plausible it is to assert that the results can apply beyond the immediate context in which the research was conducted. The checks shown adjacent regard only the *most* plausible domains and transferability. (*See also Appendix-3.2, Table 1: External Validity Criteria*).	Location, Geographically:	South-east UK region
		Field, Professionally:	Architectural design and construction, & its management
		Entity, Organisationally:	Small- to medium-sized architectural practices
		Values, Conceptually:	Sustainability-related values in building design and construction
		Frames, Conceptually:	Frames of sustainability in building design and construction
	Replication logic was used across multiple cases to triangulate and verify results through cases that were either similar (literal replication) or contrasting for predictable reasons (theoretical replication) (Yin, 2009).	*Literal Replication*: Within each case group, studies were structured and methods were *literally replicated* to generate and analyse multiple similar cases, where case similarity was considered at the organisational level and project level, i.e., commercially-oriented architects with residential, commercial office, or healthcare projects.	
		Theoretical Replication: Between the three case groups and between cases within each group, studies were structured and methods were *theoretically replicated* to examine the same constructs, their interactions, influences, and effects.	
Construct Validity	*Construct validity* regards the specification of operational definitions and measures for the study variables identified in the research design (also a category of internal validity, see below). Please see Table 43 Construct Validity checks.		
	Operational definitions involved defining the event or process studied in terms of specific concepts FROM THE LITERATURE which were directly related to the study objectives.	The influence of values on framing sustainability in the decision-making process was defined in terms o specific concepts directly related to the study objectives. Each concept or variable as a component of the framing event was defined operationally in *Chapter 2* for: Decision-making process, frames and problem-framing, values, and sustainability, with additional specification of their relationship of influence.	
	Operational measures or gauges were identified to provide a basis for comparison as a reference point against which the process and its concepts were evaluated.	The above-mentioned definitions specified not only each concept as an abstraction but also identified th operational measure, reference point, comparison statement or indicator of the concept, i.e., what valu or influence looks like in practice, as the degree, magnitude and direction of an interaction, and relationship manifesting as pattern of experience.	

(Continued below)

Table 40 (cont.) Research quality criteria for Rigour: Validity and Threats to Validity

Criteria	Criteria description	Application / checks (how aimed to be achieved)
Internal Validity	*Internal validity* regards the accuracy of ***inferences*** drawn between data and observations and findings to arrive at conclusions that reflect the data, rather than spurious, forced, or biased conclusions (Onwuegbuzie & Leach, 2007; Yin, 2014). Analytical strategies to facilitate linking propositions to data to promote internal validity were introduced above in §3.6 and detailed extensively in Appendices 3.2-3.4, with the key strategies and checks outlined below.	
	Poorly specified *operational constructs*	The strategy applied for specifying operational constructs was threefold, initially introduced under Construct Validity above. *Literature-based specification* involved reviewing and assessing established definitions of core concepts (e.g., values, frames, decision-making, sustainability, etc.) then agreeing operational definitions and having the research assessed and peer-reviewed with those definitions at key stages. These operational definitions were then subject to *verification* through data analysis and findings stages, and internal review and peer review of findings, providing clarifications as required. *Refinement* of operational definitions were then based on findings and key emergent factors, reviewed internally and peer review as above.
	Pattern matching	*Pattern Matching* was used to identify and evaluate within-case and cross-case patterns, using the patterns and relationships identified in earlier case analyses and earlier literature review; it is also functionally similar to experience pattern-mapping technique of Thematic Analysis (Yin, 2014). This facilitated identifying micro-, meso-, and macro-level patterns happening in particular interactions at particular times in a project and across participants with different projects and clients.
	Explanation-building	A grounded approach to the case-based research design involved inductive procedures and the constant comparative method to 'let the data speak for itself' by continually comparing and contrasting newly developing insights with extant data, case-maps, memos, and literature as appropriate to the research phase. Constant comparison was employed as an underlying, analytical and research management technique to promote rigour, cohesion, and validity into first-order explanation-building, second-order theoretical insight-building, and subsequent generalisation or theory 'up-scaling' to derive more general principles from patterns identified across multiple specific instances. (Please also see analytical framework §3.6).
	Logic models	The purpose of using logic and logic models was to "communicate the underlying 'theory' or set of assumptions or hypotheses […] about why it is a good solution to an identified problem (Schmitz and Parsons, 2004)." In constructing an initial logic model, sequential iterations of logic are employed to, 1) analyse inferences identified in both literature sources and data; 2) unfold and conceptualise the inferences' components; and 3) illustrate potential causal links (Anderson *et al*., 2011). In this research, potential basic causal links were identified, mediators in decision-making were sought, and *a priori* subgroup analyses were mapped in a 'naturalistic' process model. In this way, grounded, linked chains-of-evidence were sought and tied to initial logic through aforementioned case-based grounded methods, thereby clearly establishing initial research foundations in a logic chain from specific instances through to broader patterns within-case and cross-cases, which was furthered later as evidence and theoretical insights were developed.

(Continued below)

Table 40 (cont.) Research quality criteria for Rigour: Validity and Threats to Validity

Criteria	Description	**Application / checks** (how aimed to be achieved)
Internal Validity (cont.)	Researcher bias	*Researcher bias and biased conclusions* regard reliable inferences, sufficient and convergent evidence, and effective controls for identifying relationships between data and any interpretations (Yin, 2014). This study employed strategies and controls in data generation, analysis, and discussion of findings, including: constant comparison and continual questioning; cross-checking the data with the analyses and with proposed descriptive, explanatory, and theoretical statements; and use of verbatim data nuggets and slices to illustrate such statements. *Detailed supervisory team reviews* of data generation, mapping, analysis, involving reviews of transcripts, coding, thematising, categorising, and analytical abstractions, with challenges to any perceived bias, alongside peer review processes. *Peer review* provided feedback, challenge, and facilitated revisions through conference abstracts, papers, and presentations; peer reviewed journal papers and associated feedback and revisions; and internal university-level stage-based and annual reviews with thesis panels of school-level 'internal' and university-level 'external' reviewers.
Internal Validity (continued)	Confounding variables in weak analyses	To identify and assess potential confounding variables, the coding, mapping, and analysis process rigorously disaggregated and sequenced precise variables, subject to internal and peer review, to eliminate any confounding variables through robust analysis of values in context and frames in context using established definitions and specific training to identify them.
	Insufficient evidence to support claims	Quality through Reliability and Replicability outlines the strategies and checks performed which are summarised in Table 41.
	Alternative or Rival Explanations	*Rival Explanation testing* was used to construct & test rival explanations in developing and evaluating theoretical statements both within- and cross-case (Yin, 2014). *Alternative Explanations* were first checked through the design of the study to devise & test rival explanations, and second, to analyse the data using rigorous, systematic, linked & recorded steps & methods (Yin, 2014). Alternative explanations were candidate statements that might better describe the event or causality with the study designed to capture & assess those alternatives (Yin, 2014); Appendix-6.1 contains a detailed examination & assessment of plausible alternative explanations, helping to assess & revise the associated theoretical statements & insights.
Reliability	Fundamentally, reliability is an issue of operationalisation, documentation, and auditability (Yin, 2014:49). In this research, reliability was achieved through operationalising variables & processes in data generation, recording, & analysis, and achieved via thorough documentation & auditability of the research process and methods, in terms of which methods were used, why, when, how, where, & with whom, using the two main procedures below.	
	Accurate and reliable documentation through the development, regular reference to, and application of repeatable procedures.	*Case study protocol*. The 'case study protocol' was the detailed set of procedures or 'procedural guide' for data generation that includes field-based questions (Yin, 2014:240). In this research, the protocol included, 1) this *Chapter 3* research design and methods framework and procedures, 2) the interview design including questions, informant information sheets & ethics forms (Apx. 3.1); the focus group values elicitation workshop plan/design, questions, and 4) the participant information sheets & ethics forms, and PVQ-40 questionnaires.
		Case study database and filing system. The case study 'database' was comprised of all the responses and data generated using the protocol, both stored digitally and physically. The principal function of the database was to "preserve your collected data in a retrievable form (Yin, 2014:124)". In this study, data was held in four forms: digital audio recordings, digital transcriptions, hard-copies and scanned PDFs of questionnaires, and hard-copies and photographic evidence of the focus group clustered values statements (sticky notes on an A1 board). Thus, through reliable records, documentation, and following the procedures outlined in the study case study protocol, reliability was maximised.

Table 41 Quality through Reliability and Replicability

Criteria	Description	Application / checks (how aimed to be achieved)
Reliability (continued)	*Transparent linking* of observations, claims, and findings back to the data.	This was accomplished through informant quotes and vignettes, felicitous cross-references that annotate wherefrom a 'data slice', 'data nugget' or quotation came, and reciprocally accurate and detailed process documentation (e.g., Yin, 2014).
Replicability	*Replicability* in case study research emphasises demonstrating that 'repeated operations' achieve 'same results' (Yin, 2014), e.g., how values influence frames. In this research, proof of replicability was demonstrated by following the same procedures and conducting the same study with different participants, arriving at reliable findings and conclusions, using the two main methods below.	
	Literal Replication	Achieving *Literal Replication* involved repeating the same procedures on similar cases as a direct or literal replication to produce predictably similar findings across cases in a case group (Yin, 2014). In this research, literal replication was achieved at *case level*, whereby procedures were repeated by generating and analysing data for client-project cases and units-of-analysis using the same data generation methods (interview questions, focus groups, and questionnaires) and data analysis and presentation methods (grounded thematic analysis, analysis matrices, mapping, etc.).
	Theoretical Replication	Achieving *Theoretical Replication* involved the replicability of procedures to different case groups to produce predictably different findings. In this research, theoretical replication was achieved at *group level* whereby the above-mentioned procedures were repeated by generating and analysing data from different participant groups or organisations who took one of three broad architectural approaches.
Applicability, Analytic Generalisability, & Transferability	The *Applicability* of the research concerned what was learnt from case study results and how results were 'transferred' from one situation to another, i.e., applicability as the relevance and pertinence of the research findings, to what they apply, and how (Yin, 2014; Onwuegbuzie and Leech, 2007). In this research, *transferability to situations* was achieved through two forms of *analytic generalisability*, by using case study data to produce abstracted statements (codes, themes, categories), and inferences about human behaviour & situations which apply or *transfer* to other concrete situations, and to contribute to theory-building where appropriate (Yin, 2014).	
Applicability, Analytic Generalisability, & Transferability (continued)	*Existing theoretical concepts*	Existing theoretical concepts from extant literature (or prior hypothetical proposition) were corroborated, modified, rejected, or otherwise advanced as shown in the two findings Chapters 4-5 and the Discussion and Conclusion Chapters 6-7.
	New concepts	New theoretical concepts that arose upon completion of the case study were built around the evidence from the case data generated as per the Reliability and Validity criteria above and below. As outlined in §3.2.5.1 and specifically 3.4.4, **new concepts were treated as 'emergent factors'** and assessed and addressed during reflection at transition between study-parts and the study and research phases on theoretical sampling procedures outlined above (§3.5).

Table 42 Foundational structures and predicted applicability of analytic 'generalisations' or theoretical insights

Criteria	#	Application, how aimed to be achieved
Foundational structures informing analytic generalisations for theoretical insights	**1**	*Hypothetical proposition* in which a prior, preliminary statement hypothesised as the problems previously seen in practice and their potential causes was formed as a pre-research field observation and transparently captured as a preliminary hypothesis deducted from practice (see §1.1.1), was crystallised during research planning and used to preliminarily guide and form the foundations for the research (as Yin, 2014).
	2	*Philosophical scaffolding, and ontological and epistemological framework* (see e.g. §2.6 and Figure 11) whereby relevant theories were transparently 'brought in' to help develop and structure the underpinning logic and research design and guide which procedures were admissible based on such logic, CSM, and the research design (Yin, 2014).
	3	*Theoretical and conceptual framework* in which extant theory guided the research design, data generation and analysis methods as ***consistent with those needed to advance knowledge*** (Dunleavy, 2008) in AEC design and its management. This framework later helped begin to describe or explain the data and relate or triangulate findings to existing knowledge and help identify any novel contributions, then 'bring in' any other theories and concepts needed to do so, as permitted by CSM (Yin, 2014).
Predicted applicability of analytic generalisations	*Three 'layers' of human conduct* as they relate to architectural design and construction decision-making in particular:	
	A	*The influence of values on frames, framing, and decision-making*, both generally as human variables, and specifically as the way the studied individuals' values came together with others and influenced the framing of sustainability as a decision-problem in decision-making scenarios.
	B	*The interpersonal interactions* in the initiation and conduct of typically ongoing sustainability decision-making discussions (in which sustainability was introduced 'in one end' and a decision or pseudo-decision was 'produced' at 'the other end') from the perspective of values and frames.
	C	*The broader interpersonal-level dynamics* that input into and ultimately affected the outcomes of problem-framing and decision-making interactions.
(See Chapters 4-7 for evidence of applying analytic generalisations within and across cases).		

Table 43 Construct validity addressed in this Research (adapted from Winter, 1989, in Mills, 2013)

Tactic	Approach Taken in this Thesis
Multiple sources of evidence (Yin, 1994; Eisenhardt, 1989)	Multiple sources of evidence were used during the data generation and analysis phases. Multiple perspective interviews were conducted during the research (multiple organisations and participants) and validated (data involved multiple participants and their interactions with key project decision-makers).
	More specifically, using three validated methods, evidence was generated from three different organisations of participants who took three different architectural approaches (commercially-, design- and sustainability-oriented). With a minimum of six participants from each organisation, twenty-six cases were identified with twenty-six client-projects, providing a range of evidence as described in Ch's 4-5.
	The conceptual and analytical frameworks were evaluated through initial Pilot Testing, later preliminary Exploratory & and were found to be robust, with relevant and valid adjustments based on emergent factors as clearly identified in Ch's 4-5.

(Continued below)

Table 43 (cont.) Construct validity addressed in this Research

Tactic	Approach Taken in this Thesis
Establish chains of evidence (Yin, 1994)	All interview and focus group data were recorded in real time then transcribed shortly afterwards to provide a close relationship between researcher and participants' data. Multiple evidence sources were stored in a single location and rigorously linked internally within cases and externally across cases through cross-references and hyperlinks to text documents and lines, or to spreadsheet documents and cells. For instance, (AR08-CL2: AM-D72) is for Architect 8 and their named Client 2 data nugget in analysis matrix cell D72; or (AR16-CL4: L128) is for interview transcript Line 128.
Refute any assumed relations between phenomena (Blismas, 2001)	Case-based grounded methods included triangulation and constant comparison and alternative explanations (see Appendix-6.1); Peer-reviewed presentations of the research and findings at various stages provided **peer feedback** to challenge assumptions, assumed relations, and bias; Review & dissemination of the approach and findings was through case study application and assessment, and publication.
Member-Investigator triangulation and review (Yin, 1994; Mills, 2013)	Developing method, applications, coding, analyses, mapping, and final case study documents were all periodically reviewed by the supervision team during design, interpretation, and analysis phases, and before publication and submission.

The next two sections summarise the remaining criteria for interpreting and assessing the research.

3.8.2 Interpreting case study findings

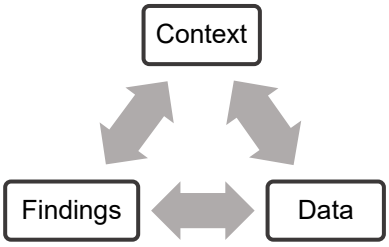
As the last key criteria for the research, case study interpretation regards clearly stating the criteria by which the case study can be interpreted (Yin, 2014). Such criteria provided principles and tools to demonstrate the appropriateness, adequacy, 'fit', and significance for interpretations and explanations in the findings (Yin, 2014). Two closely interrelated concepts of rival explanations and relational significance involved in criteria specification are outlined in Table 44, and detailed in Appendix-3.4. Rival explanations are evaluated in Appendix-6.2.

3.8.3 Judging case achievement

In its most basic form, achieving the aims and objectives of the study as initially identified served as the primary criteria for judging case study success. Such criteria are necessarily aligned with, and include the purpose and driving questions to produce, at least four success criteria. These are examined and

unpacked in detail in Appendix-3.2 and summarised below. Effectively this was a key exercise in reflexivity for the study and researcher to stand back and evaluate the progress and outcomes of the research at key points in the development and conclusion of the work. Nine criteria comprised a set of achievement standards against which the success of the case study research can be judged, compiled in Table 44. These also informed Chapter 6 Interpretation and Discussion, and Chapter 7 Conclusions.

Table 44 Criteria for Interpreting Case Study Findings

Criteria	Description	**Application** (how aimed to be achieved)
Case study interpretation	This regards clearly stating the criteria by which a case study can be interpreted (Yin, 2014). Such criteria provided principles and tools to demonstrate the appropriateness, adequacy, 'fit', and significance for interpretations and explanations in the findings (Yin, 2014:35-36).	
Relational Significance	The significance of observed phenomena and any differences within and between cases was specified *relationally* for qualitative studies (not statistically as for quantitative). This involved determining the extent to which the findings reflected the data and related to the context in which they were found. Such criteria were specified to determine whether the findings are *contextually appropriate, accurate, and significant*. This extent was determined by specifying and assessing two facets regarding *accurate reflection* of data in the findings and *relational factors* of findings to the context, which closed the loop from research problem to research design, data generation and analysis, and findings relating to the data (and not e.g., researcher bias or spurious conjecture).	
	Contextually appropriate	The findings are appropriately related to their context both in terms of the *data context* through the application of Validity, Reliability, & Replicability Criteria above, and the *contextual applicability* through applying Transferability Criteria above.
	Accurate reflection	As illustrated in the figure of Closed Loop Findings below, the findings accurately reflected the data specifically again through Validity, Reliability, and Replicability, and related to broader contexts in which the studies were conducted and participants professionally operate, through the application of *analytic generalisation* towards transferability to similar situations. 
	Relationally significant	The findings confidently apply and relate to the data in their relative contexts by identifying and assessing related and plausible rival explanations, given the context in which the study was designed to apply. The Findings and Discussion Chapters 4-6 provide plausible, accurate, useful, insights into the behaviours studied and the study variables, their interactions, influences, and effects by applying the methods and criteria as described above.

(Continued below)

Table 44 (cont.) Criteria for Interpreting Case Study Findings

Criteria	Description	**Application** (how aimed to be achieved)
Rival explanations (see Appendix-6)	**Rigorous**	Are the findings biased or incomplete in such a way as to prevent or limit the identification of both plausible explanations and plausible rival explanations?
	Effective	Have the rival explanations been examined effectively?
	Sufficient	Are there any more plausible and justified explanations for the phenomena and insights provided? Appendix-6 provides rival explanations and their evaluation.

Table 45 Judging Case Achievement

Case Achievement Criteria	**Approach used in this research**	***§ in Appendix-3.2***
Research questions answered	Each Study and study-part (e.g., ES3a) begins with guiding questions, statement of purpose, then ends by a statement of whether they were achieved, impact on the main study, and any adjustments required.	**§1.1**
Purposes achieved		**§1.2**
Aims and objectives achieved	Aims and objectives outlined above were used to assess their achievement and implications in Chapters 6-7.	**§1.3**
Contribution to knowledge articulated	Five main contributions were integrated to form an overall contribution in *Chapter 7 Conclusion*.	**§1.4**
Exemplary characteristics identified		
Significance articulated	*Chapter 6 Interpretation and Discussion*, and *Chapter 7 Conclusion* articulate the research significance for both research and practice.	**§2.1**
Completeness and analytic boundaries articulated	The research takes validity from its analytical and theoretical depth through twenty-six rich cases aiming for transferability rather than for population generalisability. Study boundaries were clearly articulated in this chapter and the Findings Chapters 4-5, and achievement of study completeness is articulated in a reflection for each study-part (e.g., ES2c) and study conclusion at the end of each main study (e.g., ES3).	**§2.2**
Alternative perspectives considered and incorporated	Alternative routes to achieve the study aims and objectives were examined through Chapters 1-3. Alternative perspectives were incorporated through research team reviews, research dissemination at conference and through publication. Alternative explanations were entertained, generated, and were evaluated in Appendix-6.1.	**§2.3**
Sufficient evidence considered and presented	Evidence was generated through three validated methods from three different organisations of participants who took three different architectural approaches. With a minimum of six participants from each organisation, twenty-six cases were identified with twenty-six client-projects, providing a range of evidence as described in CH4-5.	**§2.4**
Composed engagingly	To discretise a complex, dynamic, interactive, non-uniform and nascent phenomenon, the research developed from a broad Pilot Study to focused Systematic Studies. Each study (e.g., Exploratory Study ES2) was split into parts (e.g., ES2a-ES2c) to identify a specific aspect of the research problem and pinpoint concrete answers to a set of discrete guiding questions. Evidence was provided from the participants using verbatim quotes as 'data nuggets', analytical extracts from the analysis matrices, numerous tables to provide overviews and summaries of key factors and findings, with focused argument and critique of the analyses (Mullins and Kiley, 2002) to enhance reader engagement.	**§2.5**

3.9 Chapter summary

This chapter introduced and then discussed in detail the research philosophy, methodology, and research methods from data generation to data processing, mapping, and analysis. The evolution of a philosophical scaffolding and conceptual and theoretical framework were introduced, as it provides an outline of the operationalisation of key variables, and facilitates the important judgment criteria for research quality, rigour, and achievement, summarised above and further detailed in Appendix-3.2). The data analysis design, methods, and framework were extensively detailed, resulting from the findings of a literature review which gave rise to these methods.

The complex, dynamic, multi-layered, and interactive practical human problem of sustainability as investigated here required systematic and methodical approaches and strategies to unpack and closely examine the variables, associations, patterns, and processes found. The research necessarily required a multi-layered design, and this was employed both in the research methods and the analytical framework. The three primary methods of case study, thematic analysis, and grounded techniques as demonstrated above are indeed compatible, appropriate, and justified for such a study. A critical reading of their respective principal authors suggested that each builds in analytical rigorousness from the previous, respectively. Case-based grounded thematic analysis proven to be rigorous in terms of processes that explain how to proceed from data to theoretical insights, with additional dimensions assessed in Table 46.

Table 46 Assessment of case-based grounded thematic analysis (CBGTA)

Category	Assessment
Rigorous processes	CBGTA has proven to be rigorous in terms of processes that explain how to proceed from data to theoretical insights.
Pragmatic and natural	CBGTA has helped describe the processes which are naturally and automatically occurring in good research, particularly with diagramming and mapping sequences since the early ideas and sequences began to emerge.
Epistemologically aligned methods	CBGTA aligns with the research philosophy and constructionist case study methods of structuring the research.
Epistemologically aligned variables	CBGTA aligns with the interpretive symbolic interactionist epistemological position associated with frames and framing and the role that values play in their development and communication.

The research preliminarily began with pre-research field 'observations' as rough working hypothesis (§1.1.1) which was transformed through the research design into research questions that allowed for inductive development of theoretical insights through the emergence of theory to explain phenomena observed in the data. By structuring the research as case studies borrowing analytical techniques from other methods (a recommended tactic, according to Yin (2014)), the borrowing of a 'classic' grounded approach and move toward Charmaz's constructive approach (Charmaz, 2006) allowed for the emergence and development of methods and data collection as the analysis progressed in a natural and justified way, meaning its conduct was also natural as the research developed. The main thematic analytical approach borrowing grounded techniques is commensurate with the iterative, recursive needs and findings of data generation and analysis for this research. Thematic analysis also allowed for recognising existing theory as plausible explanations of phenomena observed in the data which was ideal for this research. Thus, rather than theory-testing through data generation and analysis, theoretical insights derive or emerge from and are therefore linked to the data for improved validity and reliability.

Chapter 4 **Findings**: Exploratory Studies

4.1 Chapter introduction

The purpose of Chapter 4 is to communicate the main preliminary findings of the Exploratory Studies from Phases 2-3 (Figure 2), signpost supplementary material, then draw conclusions to the explorations through reflection, which are interpreted and triangulated to existing literature in Chapter 6. This chapter is organised in three main parts, highlighted in Figure 3. The exploratory Pilot Study ES1 with mixed-participant Group 1 (§4.2.2) incorporates a concept mapping study, MA1 (§4.2.1). The preliminary Exploratory Study ES2 with Group 2 architects contains three interconnected parts, ES2a-ES2c (§4.3), with a process mapping study, MA2, concluded by a transition to Phase-3 (§4.3.5). The case-based grounded research approach allowed for necessary adjustments to the research design, importantly allowing for exploration of emerging concepts. Key emergent factors were examined in the second, more structured, Exploratory Study with Groups 1-2 in three interlinked parts, from broad to specific, ES3a-ES3c (§4.4), also incorporating a detailed mapping study MA3 (§4.4.2). They are concluded with a reflection and phase transition (§4.5) to more systematic studies in Chapter 5.

The principal broad aim of this research was to investigate values and frames as missing links in human individual and interpersonal dimensions of decision processes affecting sustainability. New research may help to identify and crystallise drivers and barriers of sustainability at an early and foundational point the procurement process, setting the stage for future change in a building's design and construction. As concluded from the literature review, these links are missing because they have been insufficiently investigated and are inadequately leveraged in current practice. Therefore, the purpose of these multi-part exploratory studies was to investigate human values influencing the formulation and framing of sustainability as a decision-problem in design decision-making processes at an individual level within an interpersonal context. With the grounded research

design, inductively-derived emergent factors arose through the analyses and were evaluated based on their contribution towards theoretical saturation and achieving the research aims.

The research phase and study-parts reported in this chapter explore framing interactions broadly then deeply with a lens of values influences in design decision-making processes. The objective for this phase was to explore, identify, and probe key factors which could later be studied more systematically within and across participant groups. Together these primary data studies sought to fulfil the overall objectives (Table 22) by exploring framing in decision-making processes with a values lens, and values and frames as the content of those processes.

4.2 Pilot Study ES1: Exploring values influences on framing sustainability

To help broadly explore basic parameters (or the 'landscape') of values and framing relations in architects' interactions with key stakeholders involving sustainability decision-making, a pilot study was conducted. This study first trialled or 'piloted' the data generation and analysis methods with a mixed group of ten building design and construction professionals, with guiding questions and purposes outlined in Table 47.

Table 47 ES1 Guiding questions and purposes

Category	#	Element
Guiding questions	Q1	Which influences in early design decision-making concerning sustainability are associated with human interactions?
	Q2	Which values and frames were identifiable in those interactions and are there any associations with framing and decision-making processes?
Purposes	P1	To preliminarily understand the landscape of key players and basic parameters, wherein relevant characteristics of values, frames, decision-making (V),$[F]$,$[\![DM]\!]$ may be identified.
	P2	To find values and frames through interviews and values workshops (which would show whether it was possible and equally what adjustments were necessary).
	P3	To preliminarily identify potential relationships between $(V)\Leftrightarrow[F]\Leftrightarrow[\![DM]\!]$ and any emergent factors for further study.

This would help to understand which interactions were subject to human influences; therein, values and frames were studied. It consequently indicates where, if at all, influences of human values on framing of decision-problems are present. By knowing values and frames presence, detecting the influence of values on formulating frames would follow from questions designed to reveal their relationships.

The understanding gained from this study and its emergent factors was used to develop the subsequent case group and participant selection for the remaining two-stage, multi-part exploratory case studies whose findings would contribute towards both theory and practice of architectural sustainability. Following from an initial concept mapping MA1, highlights of the main findings are shown in the tables and figures below; additional Pilot Study detail is provided Appendix-4.1.

4.2.1 MA1 Initial thematic concept mapping results

This two-part preliminary mapping exercise newly revealed (i) basic concepts and relationships in decision-making with a values-and-frames lens (following Braun and Clarke (2006)), and (ii) clusters of sustainability-related concepts. These graphically represented indicators both of key framing components (following Matthes and Kohring, 2008) and of human values present in architects' retold experiences sometimes including discussions with specific project stakeholders. This showed an association between values-and-frames, but lacked the capacity to demonstrate influence on one another, or on decision-making affecting sustainability. Values were mapped as values themes and indicator statements (as Braun and Clarke, 2006; and Podger *et al*., 2016) which helped reveal their categories and, later, broader values types such as responsibility-type, profit/gain-type, benefit-type values.

Concept maps were useful to identify the presence and differences between core factors of people—place—point, the factors contingent upon them, and core

processes involving them, indicated in Figure 25. Three core interpersonal processes were found to be 'relationship-building, teambuilding, frame-building', with supporting focal factors of 'sensemaking—framing—reframing'. Their relationships can be characterised as 'interactions-influences-omissions').

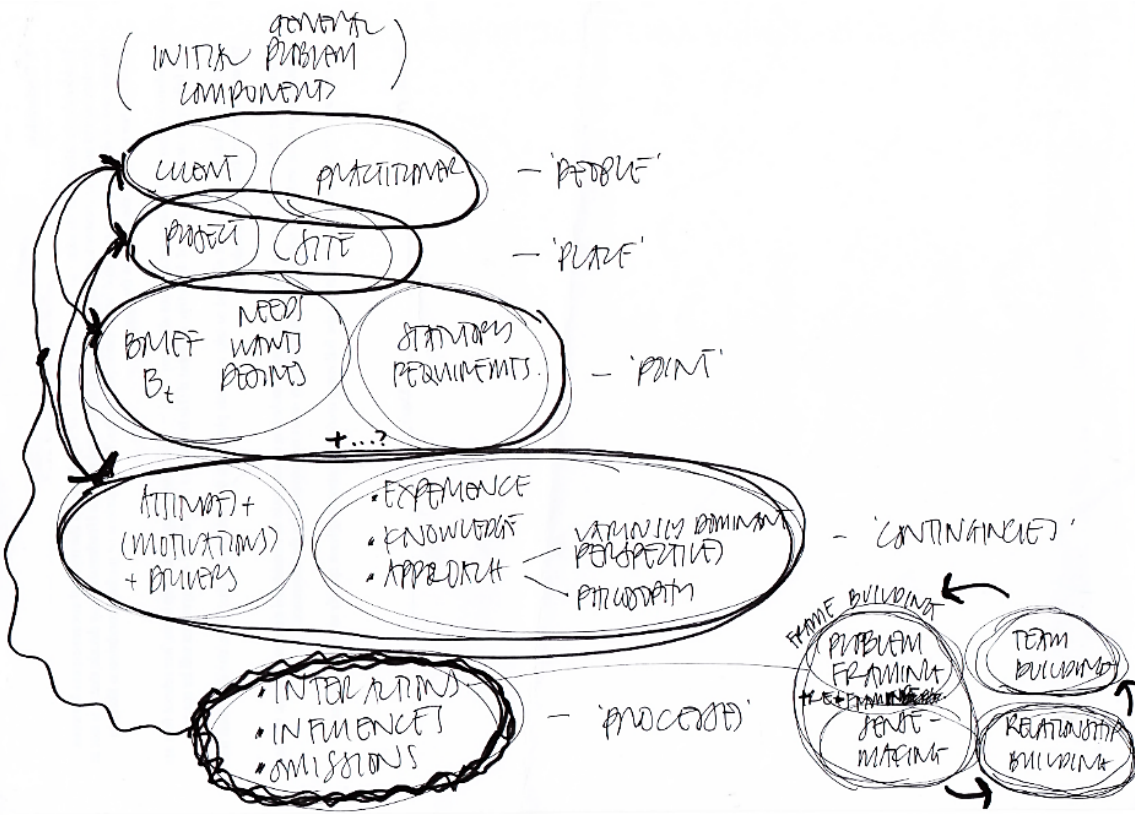


Figure 25 Initial Sustainability Problem Components (using the conceptual graphic method

Conceptual mapping was useful to help characterise 'frame elements' e.g., various aspects of sustainability regarding the design problems recounted by practitioners; 'reasoning devices' (as Van Gorp, 2007) e.g., justifications and causes, and their consequences found here as drivers, influences, boundaries, barriers related to values and/or frames; and 'contextual frame packages' e.g., backgrounds, settings, and contexts. In this view, frame packages situate the frame elements and support the meaning given by reasoning devices.

This study-part found several important factors which would prove helpful for subsequent research stages and potentially for future studies. First, stakeholder engagement, human influences, framing practices, frames and values concepts

could be usefully represented as thematic maps graphically as conceptual diagrams (e.g., Fig. 25) to help identify these components' presence and begin drawing out potential relations, thus used in subsequent phases of the research. The conceptual graphic method was later useful in an initial attempt at diagramming the framing process linearly in MA2 mapping method described in §4.3.1.

4.2.2 ES1 Main Findings and emergent factors

In this preliminary pilot, the main findings are gathered into two categories. First, sustainability decision-making interactions are conceptualised and various influences identified. Then, preliminary findings on basic patterns of values associations in these participants' sustainability engagement and framing practices are described. These help establish a preliminary outline 'knowledge landscape' for further exploration.

4.2.2.1 Interpersonal interactions in sustainability decision-making

From a values-and-frames perspective, the participants' design decision-making interactions affecting sustainability are usefully conceptualised as a process of stakeholder engagement and sustainability framing for decision-making. Key interaction phases suggested possible 'locations' of human influences and therein values influences, see Figure 26. This did not precisely align with the project phases suggested in the standard RIBA Plan-of-Work. Participants identified several key stakeholders, where clients were discussed most frequently, followed by planners and contractors, which indicates their importance to architects when framing sustainability.

Influences on decision-making were found across a broad spectrum of 'domains' (Table 48). Several early-stage influences were found which typically resulted from human interactions, but those 'accessible' at the interindividual level from an individual's perspective were predominantly in participants' engagement of clients and stakeholders in projects. Such interactions could be more usefully described as a process to elicit feedback and decisions through participants' understanding, application, and communication of sustainability as relevant to their practice and projects, normally tailored to the purpose and goals of engagement, and the parties they engaged.

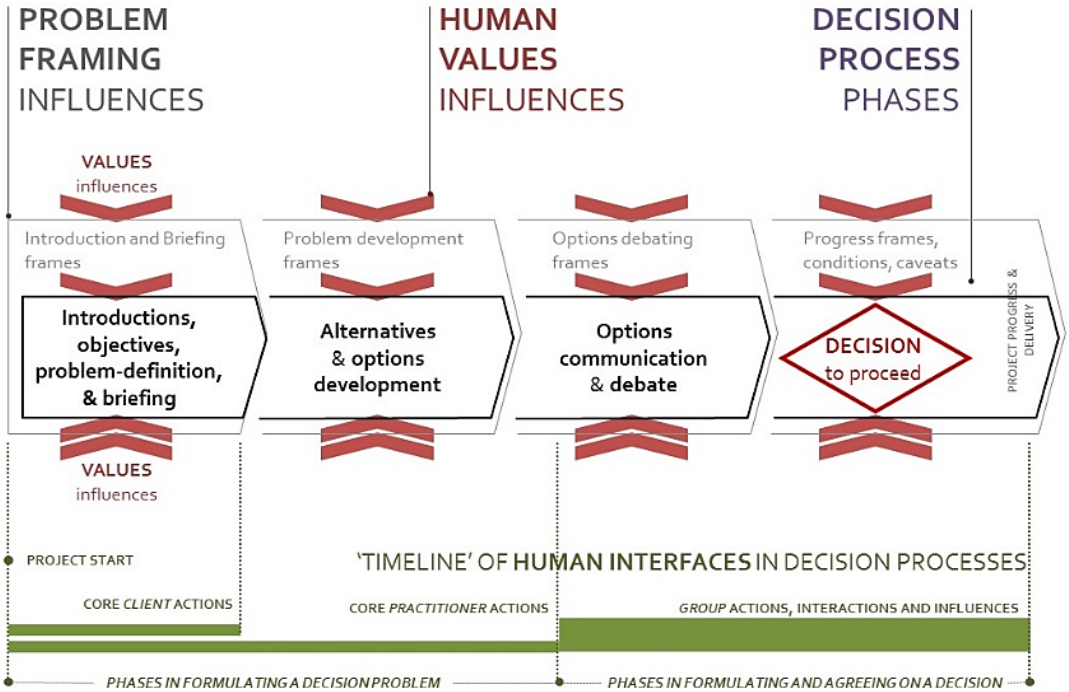


Figure 26 Phases and influences of human values and problem-framing on sustainability (prelim. mapping)

Table 48 ES1 Categories of influence on sustainability decision-making

Domain	Influence	Influence type	Interpersonal accessibility	Variables' roles
Context	Economic context	Human	*Inaccessible*	Influencing frames
	Political context			
	Practice context, type, size	Human	**Accessible**	Values-Influenced
Project	Physical context	Non-human	*Generally Inaccessible*	Influencing frames
	Project type, size, value	Non-human		
	Requirements, needs, aspirations	Human	**Accessible**	Values-Influenced; Influencing frames
Interpersonal interactions	Client engagement, interaction style	Human	**Accessible**	Values & Frames
	Stakeholder engagement, strategy, style			Values & Frames
	When and why engaged on sustainability			Values & Frames
Individual differences	Experience	Human	*Inaccessible*	Values
	Knowledge, awareness		**Accessible**	Values
	Personality: values, motivations, priorities			Values & Frames
	Communication strategy and style			Values & Frames

Considering these engagement-feedback-decision practices as 'framing in decision-making processes' was helpful to unlock a different perspective on human influence, which exposed several influencing factors. These influencing factors were categorised by three core practices in sustainability decision-making processes to reveal potential targets to locate or disaggregate values influences: Sustainability Engagement, Values Engagement, Framing Practices. Several interpersonal factors were considered to be involved in each core practice are shown in Table 49. In this view, human influences would manifest via values interactions with framing practices in decision-making. Thence, patterns in participants' framing practices were usefully considered as: Engaging with others, Values in framing, Initial frame-building, Sustainability frames and effects, and Broader patterns in architects' framing approaches, and examined below.

Table 49 ES1 Influencing factors on three core practices in sustainability decision-making

Practice	Influence Factor	Description
Sustainability Engagement Influences on how sustainability was approached and progressed	Company 'focus'	Commercially-led, design-led, sustainable design, healthcare design, client-led, management-led, engineering led.
	Company values	Collaboration, client satisfaction, financial remuneration, modern design, pragmatic sustainability, etc.
	Contextual variables	Their judgements of and reactions to project-related and environmental variables, whether implicit or explicit.
	Project-specific variables	
	Parties involved	The individuals and groups with whom practitioners chose to interact, including consultant selection and decisions to consult stakeholders.
	Individuals' experience	With construction, in industry, with the company, and with sustainability
	Experience-based biases	Doing what was done before, using tried-and-tested methods, systems, materials, knowing what works, risk aversion
	Willingness to engage	Willingness to engage with stakeholders at all, or 'where they're at' based on the stakeholders' volunteered information.
	Engagement style	Engaged 'where they are at', probed by 'testing the water by floating ideas', or pushed to do a little more.
	Willingness to cooperate	Willingness to work with the stakeholder on their terms, at least initially, or to negotiate a common position of mutual understanding and agreement.
	Willingness to probe and push sustainability	Willingness to probe for further interest sustainability, push past initial indications to locate upper boundaries.

(continued below)

Table 49 (cont.) ES1 Influencing factors on three core practices in sustainability decision-making

Practice	Influence Factor	Description
Values Engagement Influences on how values were identified and 'processed'	Probing broad interests	Issues of importance to clients, such as design and sustainability interests, 'likes/dislikes', motives and drivers.
	Personality assessment, Stereotyping, boundary sensing	Intuitive judgements were made about 'what a client is like': social status, wealth, political association, profession or career, personal interests, etc. (Socio-cultural stereotypes).
	Boundary sensing	Discover what their clients and stakeholders were 'willing to accept'.
	Probing potential commitment, Boundary sensing	Early assessments of stakeholders' potential level of commitment were sought, where three participants suggested complexity and cost implications as reasons.
	Values engagement	Stakeholders' values 'information' was overtly sought primarily during preliminary and initial stages, reducing as projects progressed, to understand 'what clients are like and think like'.
	Values assessment or interpretation	Architects identified, considered however tacitly or implicitly, and employed information they interpreted about stakeholder values based on client's responses to briefing questions, probing.
Framing Practices Influences on how sustainability and related concepts were framed	Timing	Architects unanimously introduced sustainability early in projects to establish the level towards which clients aspired.
	Own individual values	What they seek to achieve from framing sustainability and why, e.g., interest, boundaries, tolerance for complexity.
	Other's individual values	Discoveries of client's characteristics included their values, to which architects then reacted. Such responses were reflected in architect's choice of frames.
	Issue value relative to other factors	The value both the practitioner and stakeholder(s) place on sustainability—how important and worthwhile it is in relation to the other influencing factors.

4.2.2.2 Engaging with others

When engaging with stakeholders on sustainability, three key factors were identified. First, participants unanimously introduced sustainability early in projects to establish the level towards which clients aspired. Early assessments of stakeholders' potential level of commitment were sought, where some participants identified complexity and cost implications as reasons. Second, participants endeavoured to discover what their clients were 'like' and were 'willing to accept', suggesting implicit personality assessments whose characteristics importantly included their values, to which architects then reacted. Third, participants were willing to work with the stakeholder on their terms rather than dictate terms, at least initially. How and why such engagements were initiated and conducted closely resemble initial frame-building actions which are likely influenced by

participants' values, whereas interest, commitment, personality, and willingness might resemble individual values, examined below.

4.2.2.3 Values in framing

In framing sustainability for decision-making with a values lens, three main categories involving the access, use, and effects of others' values were identified. In 'values engagement', participants overtly sought stakeholders' values 'information', primarily during preliminary and initial stages, on issues of importance to clients, such as design and sustainability interests, 'likes/dislikes', motives and drivers, priorities and goals. Their 'values assessments' concerned how architects identified, processed, and employed information they interpreted about stakeholders' values in their consequent interactions, including socio-cultural stereotypes and character judgements. Through 'values processing', these factors together provided participants with beneficial 'clues and cues' about client values. With these, intuitive judgements were made about 'what a client is like and how they would think'. Participants then used their values judgements to approach and advance sustainability issues through choosing what and how to frame them for decision-making. This was important because interpersonal, values-orientated 'data' informed architects' assessments of clients, their position on sustainability, and its flexibility, thereby informing their initial frame-building.

4.2.2.4 Initial frame-building

Importantly, participants' values judgements informed their framing interactions in two ways, themselves likely influenced by participants' own values to achieve their goals. First, as 'indicators' providing guidance on using situation-appropriate communication frames to achieve particular results. Second, as initial 'boundary-markers' motivating participants' pursuit of client's limits, attempting to advance them towards improved sustainability. The statements architects made to clients were formed in context using project information they considered relevant, combined with the information and signals architects interpreted about issues

most worthwhile, meaningful, and important to their clients—i.e., values judgements. With this information, framing consisted of participant's conceptual treatment of decision-problems in their statements/communications towards securing client decisions using language and phraseology to express particular views and points—i.e., building and communicating frames. By testing client's reactions and responses to their frames, architects would gauge interest in sustainability. Similarly, responses converged to suggest that sustainability interest was treated initially as a 'boundary' concept, and then a 'binary' concept. Upon making values-based estimates of stakeholder's boundaries of interest or flexibility towards sustainability, therein architects aimed their frames of sustainability. Once reached, client responses were normally straightforward yes/no, in/out-of-bounds.

4.2.2.5 Sustainability frames and effects

Multiple terms-of-reference and phrases were recorded in and as sustainability frames (Table 50), including regulations, markets, costs, active or passive design. Importantly, emphasising one frame versus another, i.e., a matter of 'long-term operational savings' versus 'higher up-front costs'—both refer to decision criteria for the same objective entity, e.g., heating—carried different weight and was likely to influence client's decisions. Based on the above observations, sustainability was clearly framed contextually when architects reported specific project examples, whereas sustainability lacked context when more general observations were reported. Three main categories emerged on frames-in-context: as a 'set of features' with typically unsupportive decisions, as an 'integral' issue typically supported, or on ethical terms e.g., as a matter of responsibility, typically avoided or rejected. Importantly, early problem-frames provided background contextualisation or underlying foundation on which stakeholder's future

decisions were based. The cumulative effect of architect's earlier problem-framing was to 'set the stage' for future decisions on which projects were later built.

Table 50 Sample coded sustainability frames, commercial participants

1	Competitive advantage and complying with sustainability legislation
2	Efficiency; Maximising efficiency
3	Commercial benefit of sustainability measures
4	Cost uplift for sustainability measures
5	Sustainability as competitive advantage; Competitive disadvantage
6	Balancing capital investment cost versus future sustainability, competitiveness, and assured tenancies
7	
8	Keeping up with legislation; Complying with legislation
9	Cost versus value of sustainability measures
10	Return on investment (ROI)
	Meeting government requirements

4.2.2.6 Wider patterns in architects' framing approaches

Having preliminarily identified values presence, frames, categories, and basic effects, a broader pattern began emerging, which showed tendencies towards framing sustainability with certain client-types in particular ways. Participants typically engaged with sustainability issues for their own, but different, values-based reasons. When viewed from a wider perspective of prevailing patterns, this was reflected in their approaches to framing. Whilst several commercial-led architects claimed to 'push the boundaries' with their clients, their sustainability frames were mainly influenced by three primary factors: cost, regulations, and pragmatics such as usability, operations, or cost-effectiveness. Commercial-led approaches suggested a 'push away from the bottom baseline', encouraging clients away from the 'only if necessary' mind-set, and client-driven, cost-centred approach (illustrated in Figure 27).

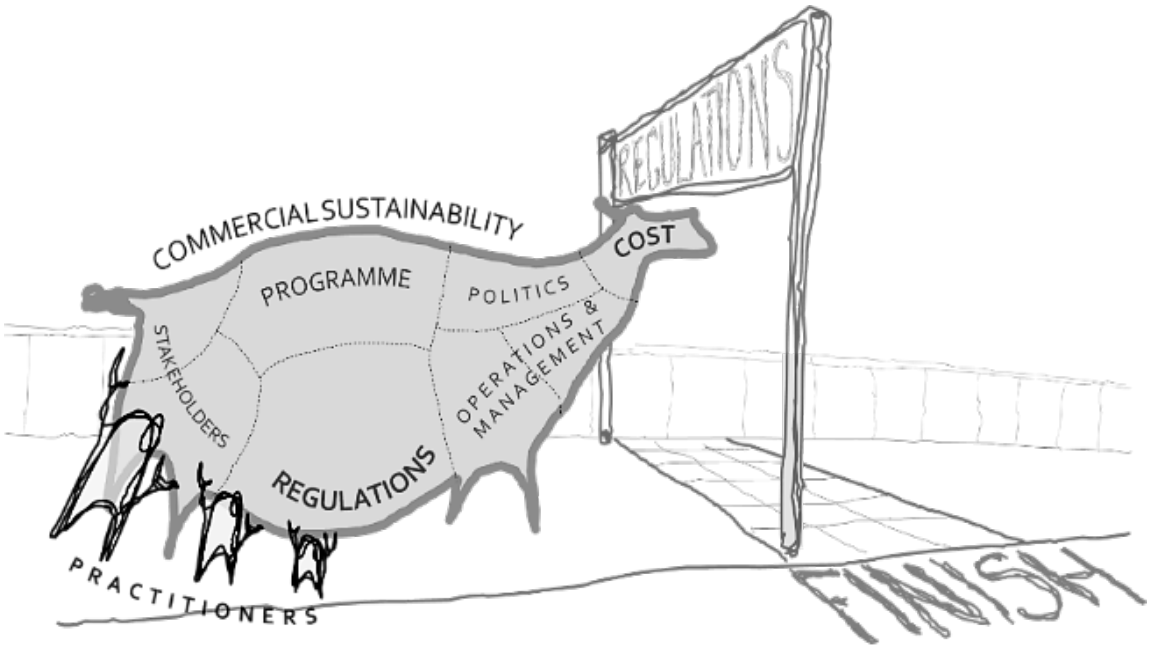


Figure 27 Commercial-led sustainability approaches: 'pushing away from the bottom baseline

Whereas design-led participants' frames were predominantly aspirational, aimed at sparking or capitalising on client interest, where passive design was implicit; regulations represented bare minimum, lowest thresholds rather than drivers of achievement; although cost remained central, forming upper boundaries of interest. Their approaches suggested a 'pull toward the top performance', 'shared enthusiasm', 'lead-by-example' approach (Figure 28). Together this suggests that 'individual/internal' factors involving the values of individuals in organisations are driving their framing of design and sustainability as prominent foci.

Figure 28 Design-led sustainability approaches: 'pulling toward increased and top performance'

4.2.3 ES1 Conclusion and recommendations

Preliminary indications of some values and frames were found through interviews and values workshops (Table 49-50), which showed the piloted methods were working, but adjustments are necessary. A landscape of key players and basic parameters was suggested, wherein some basic characteristics of values, frames, and decision-making were identified. Importantly, the landscape was rich with potential to study values-and-frames interactions and effects, but data limited and potentially too varied across different participant- and approach-types to conclusively establish potential relationships of influence between (V)⇔[F]⇔⟦DM⟧ for further study.

These findings establish a preliminary outline knowledge landscape and basic parameters on which to found and direct further research stages and study-parts. Taken together, the objectives outlined in Table 47 were achieved and the approach and methods useful to reveal possible initial insights, requiring further evidence and analysis methods to establish relationships and effects more

conclusively. These preliminary findings also begin to suggest four initial, key emergent factors outlined with treatments in Table 51.

Table 51 Key Emergent Factors from Pilot Study ES1

#	Emergent factor	Description and treatment
1	Framing approaches identified	Framing approaches and values are potentially linked. More specifically, it is plausible that values influence architect's framing and frames *via framing approaches*, to be examined further in SS2c/§5.3.4.
2	Values recognition: Participants seeking and recognising others' values, which likely matters to their framing and framed responses and decisions.	When crystallising participants' 'Accessing, use, and effects of others' values', it preliminarily emerged that participants recognising others' values (and frames) mattered to their responses and decisions. Therefore, disaggregating/discretising the framing process became necessary to understand key factors of V, F, DM, and their (inter)relationships, i.e. (V)⇔[F]⇔$[\![DM]\!]$. Values recognition to be examined further in SS2a/§5.3.2
3	Frame effects, suggested	Effects of problem-framing were relevant to decisions as outcomes from framing in decision-making processes because decision-makers responded to framed decision-problems when making decisions, examined further in ES2c/§4.3.4.
4	Values-based boundaries of client interest / tolerance (which participants discovered via frames/frame effects)	Sustainability commitment can be characterised as a boundary-binary concept. Architects' retold discussions suggested that clients' decisions as responses to frames revealed their commitment to sustainability could be usefully described as occupying a spectrum from most to least committed; once a client's (upper) boundaries of interest were discovered through responses to sustainability frames, sustainability was treated as a binary concept, either in or out-of-bounds; examined further in SS2a-SS2b/§5.3.2-5.3.3.

The richness of some interviews, alongside these emergent factors facilitated through the grounded research design, clearly indicated a need for additional investigation to reveal further insights through more detailed examination in subsequent phases and study-parts, rather than foreclose on potentially interesting and worthwhile leads.

4.3 Study ES2: Preliminary exploratory study of values influences

Gaps identified in the pilot study highlighted the need for further understanding of the basic parameters of values and frames influences in sustainability decision-making. In the second phase, a three-part exploratory study, ES2 (Figure 2-3), was designed to study framing for decision-making with a values lens using piloted methods to explore broad-ranging questions with architects of one type from one organisation—commercially-orientated architects. The purpose was to identify values influences in the process of framing sustainability as a decision-problem and on the frames used toward securing decisions about sustainability. Each study-part was guided by questions which emerged throughout the grounded, inductive development process of this research (after Charmaz, 2014).

To help understand the context and architect's 'decision environments', Study-part ES2a (§4.3.2) examines basic parameters of values influences in framing sustainability: whose influences, what values influence, how, and when, or in simplified notation, $(V)INF \rightarrow ???$. To preliminarily outline their interactions, part ES2b (§4.3.3) examines basic parameters of values influences on architect's framing and frames, as $(V)INF \rightarrow [FR]$, or $(V) \rightarrow [F]$. Through these analyses, six architect-client cases emerged which were useful to understand specific discussions retold in rich detail, thereby recalibrating the units-of-analysis in cases from participants-in-organisations to discussions-in-projects. Thus, Study-part ES2c (§4.3.4) examines two core emergent factors showing promise to help understand values-and-frames in sustainability decision-making in the six cases. These architect-client cases were mapped in MA2 (§4.3.1), incorporating the primary data informing all three parts. The completed Study ES2 is evaluated in a study transition (§4.3.5) which guided the design of the last exploratory study ES3 (§4.4). Key findings are summarised below, with additional data extracts included in Appendix-4.3.

4.3.1 MA2 Initial framing process mapping

Gaps identified in communicating Study ES1 in conferences highlighted the need to understand the relations and ordering of values-and-frames over time to reveal the source and magnitude of shifts in problem-frames, decision-frames, and values motivating framing and deciding. By clearly demonstrating frames' content and relation with values 'longitudinally' over multiple discussions within one architect-client case based on the underlying principles identified incrementally throughout the foregoing studies, it was possible to map and then consider their patterns and any emergent factors and associated insights.

Thus, to clearly illustrate the relationships identified by Unit-of-Analysis and Case, the early thematic concept mapping methods were developed and extended to show values influences through the process of framing in decision-making about sustainability. Early examples of the trials (see Appendix 4) began to represent framing in decision-making processes unfolding over time like project programmes in stages. They identified basic relationships of stakeholders and their frames over time, with values indicated simply as brackets, thus requiring further detailed analysis for better understanding of relationships between values, frames, and decisions. This then informed the design of MA2 mapping method. Highlights of the main findings about what the maps showed follow below, with the full mapping method described in Appendix-4.2.

4.3.1.1 Key findings from framing process mapping

Key information about patterns found in values and frames were recorded and annotated in detail; Figure 29 shows a representative sample of an operationalised values notation. The primary information recorded was the coded frames and speakers; coded human values and holders; the value contextualisation as a conceptual relationship or linkage. Importantly, four main elements were

identified: whose values and frames; their priorities; when in the process; and how ascertained (e.g., elicited, coded).

Through six architect-client case maps (Appendix-4.4, 6.1, sample in Figure 32), three main framing interactions were mapped. An initial, first interaction, where clients' initial 'design-problems' (iDP) were raised, representing a decision to engage with an architect. Subsequent interactions where architects reframed design-problems into briefs thus constrained possible alternatives therefore embedding potential solutions, communicated as Design-Problem Solutions (DP-S). Critical Challenges (CC1…x) were framed in consequent Decision-Making (DM) interactions. Each interaction can be represented in two ways. First, as a simplified representative equation in EQ1 below, using the components and notation introduced earlier.

$$\text{EQ1: } (V_{AR}) \rightarrow [F_{AR} + F_{CL}] \leftarrow (V_{CL})$$

This shows that when architects and clients come together to decide about sustainability in a design, both their values influence the joint frame comprising both their inputs. Second, as a graphical representation in Figure 30, its components and interactions are briefly highlighted below. Both representations begin to indicate the main 'pathways' of influence: from values to frames to values and frames over time, representatively Figure 31. To illustrate the actual discussion contents from which these representative symbols were derived, an example case map is shown in Figure 32.

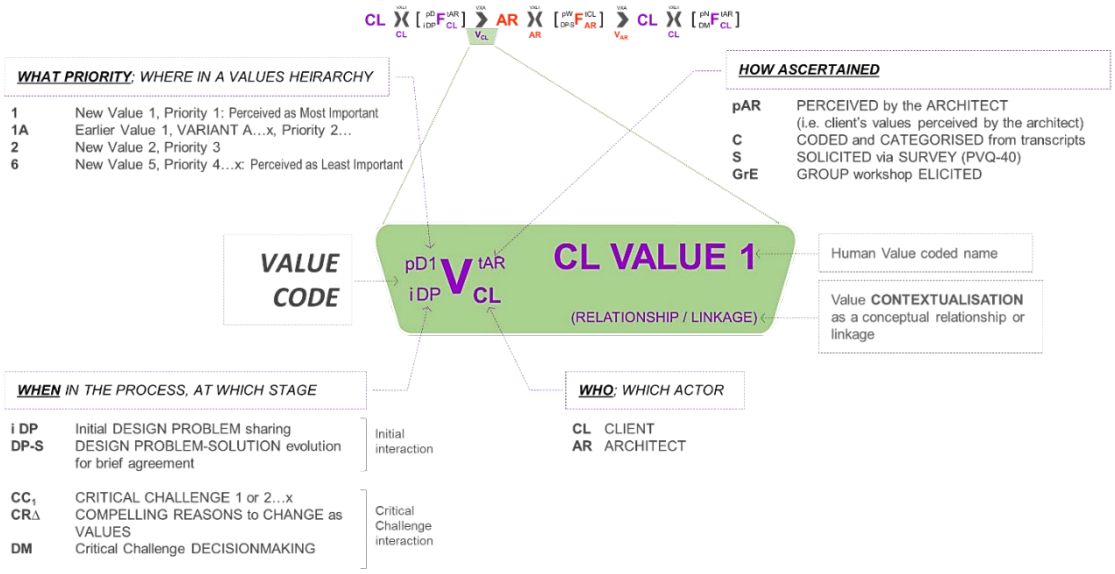


Figure 29 Operationalised values notation used in Group-G2 case-maps (see Appendix-4.2 for full

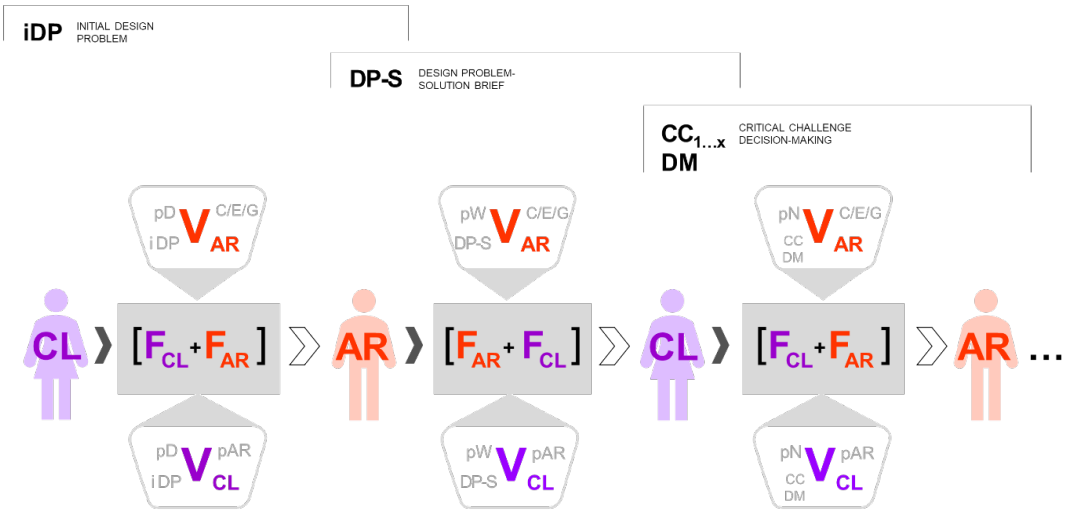


Figure 30 Graphical representation of three typical phases of sustainability decision-making interactions from a values-and-frames perspective

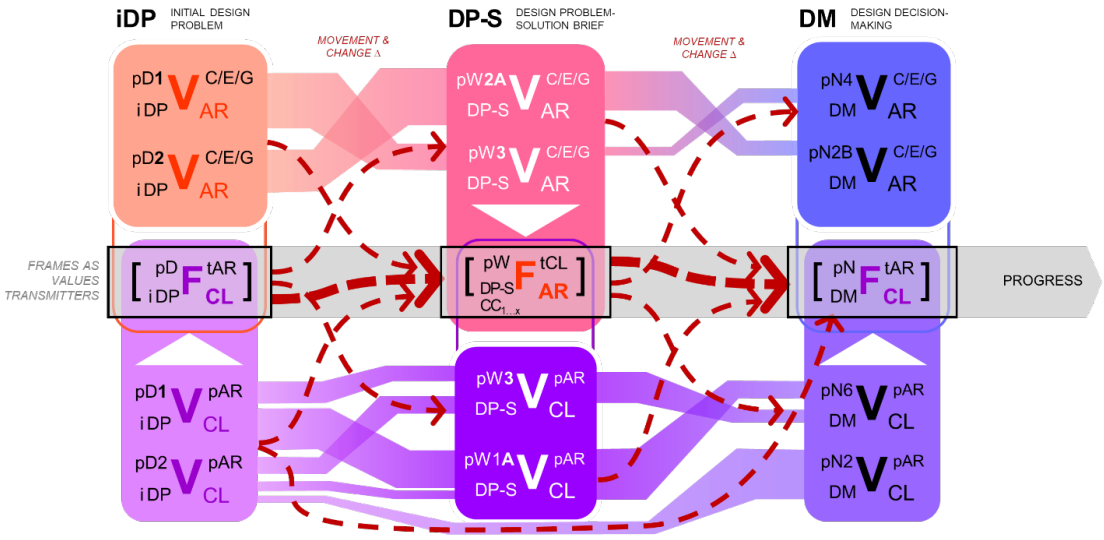
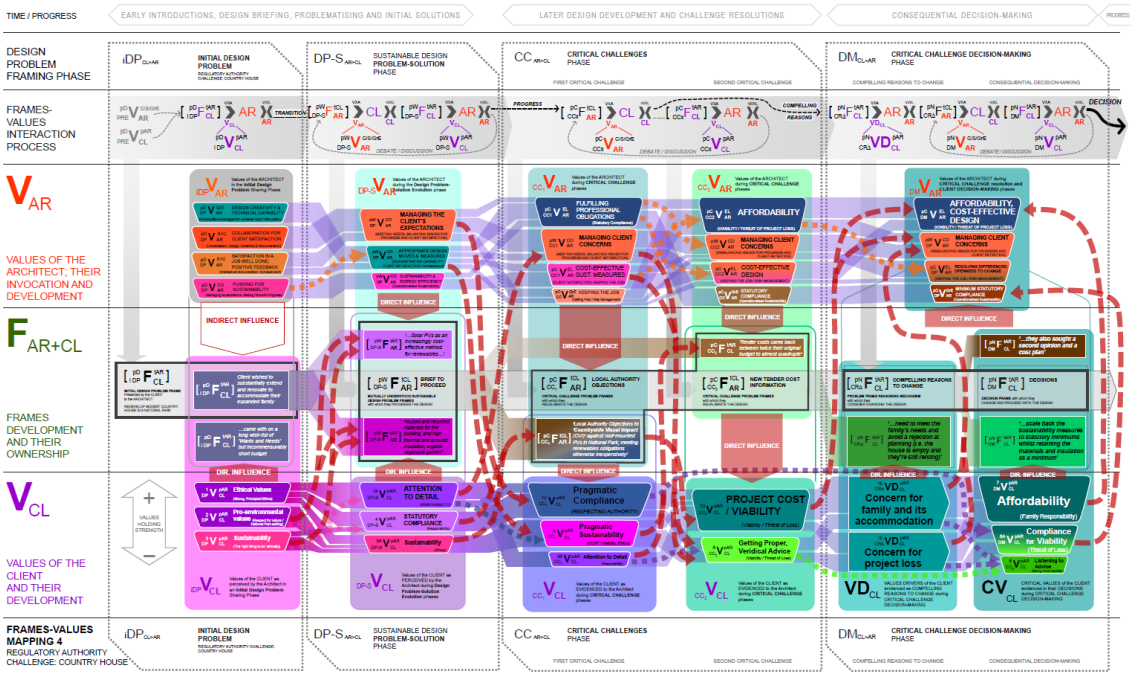


Figure 31 Representative influence pathways of values through frames to values and frames, over time

Figure 32 (below) Typical framing experience process map, Case-4: Regulatory Authority challenges, country house client (please see Appendix-4.2 for full details of mapping method, and Appendix-6.1 for all ES2 Case-maps in A2 size)


TIME / PROGRESS
EARLY INTRODUCTIONS, DESIGN BRIEFING, PROBLEMATISING AND INITIAL SOLUTIONS
LATER DESIGN DEVELOPMENT AND CHALLENGE RESOLUTIONS
CONSEQUENTIAL DECISION-MAKING
DESIGN PROBLEM FRAMING PHASE
FRAMES-VALUES INTERACTION PROCESS
VAR
VALUES OF THE ARCHITECT; THEIR INVOCATION AND DEVELOPMENT
FAR+CL
FRAMES DEVELOPMENT AND THEIR OWNERSHIP
VCL
VALUES OF THE CLIENT AND THEIR DEVELOPMENT
FRAMES-VALUES MAPPING 4
REGULATORY AUTHORITY CHALLENGE: COUNTRY HOUSE
INITIAL DESIGN PROBLEM
SUSTAINABLE DESIGN PROBLEM-SOLUTION PHASE
CRITICAL CHALLENGES PHASE
CRITICAL CHALLENGE DECISION-MAKING PHASE
DIRECT INFLUENCE
INDIRECT INFLUENCE
AFFORDABILITY
PROJECT COST / VIABILITY
Concern for family and its accommodation
Concern for project loss
Affordability
Compliance for Viability

The mapping exercise also suggested that frames operated as 'values packages'. Frames as 'envelopes' were considered to contain and communicate to listeners Entman's (1993) four frame elements: decision-problems, interpretations, evaluations, and treatment recommendations (§3.6.3). Similarly, values would manifest in frames via components of evaluations and treatment recommendations. For these parties in a decision-making discussion, participant and decision-maker contributed to details of the four (decision-) frame elements. Thus, values would 'operate' and influence others via frames (PF+DF): both parties' frames and their reasoning mechanisms also could express speakers' values information, which ultimately could influence or motivate decisions. In this way, frames can function as values transmitters. Parties can then filter, interpret, and translate each other's values into their problem-frames. Fourth, by connecting each interaction in a semi-linear format to represent parties' exchanges over time, it emerged that values influence on framing and frames can be mapped as pathways.

In a significant development, the search for values' presence in frames (e.g., initial problem-frames, later decision-frames) found that the values brought to the discussions were present—and embedded—in their communication frames. The search for values' presence in decisions, their source, and/or any variations, showed which values ultimately appeared in decisions as decision-frames, and reasoning mechanisms used to justify the decision that captured what was really most worthwhile, meaningful, and important. Thus, frames can act as 'values transmitters'.

Here it also emerged that the ordering of frames over time by phases could reveal that the quality and characteristics of both values-and-frames varies by project phases. However, importantly, rather than the phase dictating the ordering and content of values-and-frames, the mapped findings suggested that project phases will set the tone for each 'discussion-frame' as the wider context and purpose of

the discussion. The maps showed that the quality, characteristics, and priority of values can influence not only the characteristics of frames used to communicate decision-problems, but also the decisions made, then framed.

4.3.1.2 Reflection on mapping and its findings

Discretising the process of values influences in decision-making using symbols and pathways was helpful to visually capture values-and-frames, their characteristics, contextualisation, sequencing, influences, and variation over time—thus a potentially useful step towards understanding influence longitudinally. Values were identified *in* communication frames about sustainability through the evaluative component or the relative importance, worthwhileness, and meaningfulness expressed in frames by their information/meaning. A human value and its expression were related to the context, which would explain why multiple values and priority variations manifested in framing and varied by phase. The translation of values into frames was evidenced in the extent to which those frames accurately captured and re-presented the speaker's values.

Mapping values influences on frames, and frame effects on decisions via values through two key stages also indicated four key emergent factors, see Table 52.

Table 52 Key emergent factors from MA2

#	Emergent factor	Description and treatment
9	**Discretising process using symbols and pathways**	Discretising the process of V-INF in DM using symbols and pathways was useful to understanding influence longitudinally, examined in MA3 & ES3b.
10	**Sequencing matters**	Sequencing of frames to values emergence matters to decisions, later crystallised in MA3 and ES3b.
11	**Values influence pathways via frames**	Map analysis suggested that Values influences form pathways via frames between architect-client; studied next in ES3.
12	**Values manifest contextually in hierarchies in response to frames**	Decision-making can be values-expressive behaviour. Decision frames manifested and expressed the values associated with the decision. Architects' Interpretations of client values showed hierarchical structure, which dynamically readjusts and shifts in context based on newly framed decision-problems and critical challenges, further examined in MA3 and SS2a.

On reflection, whilst useful to systematically demonstrate accuracy, reliability, and validity, the mapping procedure, detail, and technicalities could be simplified. A useful alternative method would depict content, relationships, ordering, and influences in framing process more accessibly (e.g., less complicated), further examined in MA3.

4.3.2 ES2a Exploring basic parameters of values influences on framing

Following from the pilot study findings, this preliminary exploratory study-part ES2a explores the basic parameters of values influences on formulating and framing sustainability as a decision-problem. A 'guiding question' and purposes are outlined in Table 53. This will allow the significance of early-stage values influences to later be examined in the context of other influences. Highlights of the main findings to this part of ES2 follow below; further detail is included in Appendix-4.2.

Table 53 ES2a Guiding question and purposes of this study-part

Category	#	Element
GUIDING QUESTION	Q1	What are the early-stage influences of values on formulating and framing sustainability as a decision-problem?
PURPOSES	P1	To identify any values influences in architect's sustainability framing interactions (3W's+H: whose influences, what values influence, how, and when).
	P2	To identify whose values are most influential and when, i.e., the most important phases of problem-framing processes in which values influences were found, for further exploration.
	P3	To identify and record any emergent factors for further study.

4.3.2.1 Key findings on basic parameters of values influences on framing

The evidence from these architects' interactions with clients and stakeholders indicates that the complexity, dynamics, and interactivity of the building design process is likely to impact on the emergence and influence of values-and-frames. This also affected the uniformity of interview data, resulting in an extensive exploration of the data. To begin disaggregating this process, its antecedents,

inputs and outcomes, initial results were categorised into five basic parameters: who were key actors from architects' perspectives; 'what' values influence; how values influence framing processes; whose most influential values; and 'where/when' values influence. This latter category revealed two key junctures which capture the most critical interactions where values influenced architects' problem-framing processes—conceptualised as being conducted within design decision-making processes. Key findings in each category are summarised in Table 54 with data extracts in the form of case-maps derived from the same data in MA2/§4.3.1 above, analysis matrices in Appendix-4.1, and further detail in Appendix-42.

Table 54 Five themes of basic parameters of values influences on frames and framing

#	Theme	Description/Effect
1	Key actors	Clients and their representatives were considered the foremost or principal key decision-maker. Project funders, design consultants, and statutory officers all had important, early roles once the initial contact was made with clients.
2	'What' values influenced	Values could influence problem-frames via framing processes by three principal routes: 1) Participants' values guided their initial stakeholder engagement and therein the problem-framing process, wherein stakeholders' values were elicited or ascertained. 2) Through participant's recognition, interpretation, and representation of others' values-information, which informed, a) forming sustainability problem-frames, and b) the translating values into evaluation and decision-making criteria. 3) Through the ongoing design process, including the detailed frame interpretation, actioning, maintenance, and later challenge-based consequential problem-reframing, reinterpretation, and/or revision of earlier-constructed frames; see ES2c.
3	How values influenced framing processes	Values of both practitioner and client together suggested they could influence practitioner's approaches to and selection of five key factors: 1) How their interpersonal interactions were conducted. 2) How design problems were framed, the language and emphasis used in those interactions. 3) How various information and interpersonal phenomena were interpreted, and, to them, the different meaning, priority, and value attached. 4) The subsequent formulation and creation of design options. 5) The evaluation of options and priorities, and consequent expressions of preferences manifesting as decisions or 'moves' for or against options.
4	Whose most influential values	The influences of practitioners' and clients' values in early problem-framing and later challenge interactions were considered potentially foundational influences because they were found influencing the interactive setting of, 1) problem boundaries through frames, and 2) project priorities potentially representative of values.

(Continued below)

Table 54 (cont.) Five themes of basic parameters of values influences on frames and framing

#	Theme	Description/Effect
5	'When/where' values influenced:	Two key junctures were identified in problem-framing processes 'where' temporally values could influence: Initial Interactions in three parts, outlined below, and later critical challenges further examined specifically in ES2c.
	Initial interactions as initial impression-forming	First, the initial stage-setting, in which participants' impression-forming, relationship-building, and sense-making were three fluid yet identifiable sub-processes. The ways they chose to approach their interaction, including presenting themselves, and asking stage-setting questions, showed signs of influence from their individual personality characteristics including values clusters. Such approaches or informal interaction methods were likely to 'pre-inform' and guide their first discussions, even before sustainability entered the equation.
	Initial interactions as sense-making	Values then typically continued to influence participants 'sense-making' as a product with initial impression-forming when: gauging favourable attitudes and interest; prior experience, knowledge, and understanding; prior commitment; and expressions of preconceptions, aspirations, and ideals.
	Initial interactions as problem-framing	Values continued to manifest through reports of three key themes of participants' building and employing problem-frames: experience-based frames; benefit-based frames; and practitioners' own values-based frames. Architects' frames of sustainability were typically calibrated according to the first-framed interpersonal and project-related information received from the client which included initial, frequently intuitive interpretations of their interests and priorities—translated as values and their priority. This interpersonal information could then be translated by the practitioner and employed to calibrate their own frames of sustainability (and other key factors including design, cost, timescale, statutory landscape, etc.) based on the initial impressions they formed.
	Critical Challenges	Challenges to earlier-established decision-problem-frames later arose from a variety of sources and conditions identified in multiple framing discussions. These challenge points were identified by participants as critical junctures where earlier problem-frames (as they were understood by participants) were called into question, precipitating a re-evaluation. This typically resulted in significant changes to the 'values landscape', identified through participants' interpretations of stakeholder's values prioritisation, further examined in ES2c.

Participants' elicited values statements provided indicators which, when examined in the context of their retold discussions, typically showed that their values could influence their conduct of stakeholder engagements (e.g., choosing who to involve, when, and why) and constructing their frames used to communicate design and sustainability (e.g., choosing what to say, how, when, and why). Client and stakeholder values would most likely influence participants because they were implicitly and frequently unknowingly eliciting and translating others' values into their own problem-framing process and frames. Stakeholder' values might also influence framing through participants' evaluation of options and priorities, and their consequent expressions of preferences as decisions.

Importantly, it emerged that some client and stakeholder values could be identified through the statements participants made in their interviews in various statements about e.g., others' needs and wants, issues, concepts, design options, rationales and evaluations of which ideas and options were important and worthwhile to the individual for their project in those circumstances, including their expression and/or ordering of preferences. More importantly, in later 'critical challenges', the arrangement and re-prioritisation of client and stakeholder values was evident from their responses to architects' frames through values interpreted as 'clusters' or 'stacks' to represent their manifestation and priority in the context of a decision, where the influences of values were most likely through their framed decisions. Taken together, these parameters outline a basic knowledge landscape for further exploration in subsequent study-parts.

4.3.2.2 Reflection on basic parameters

This first part of the preliminary exploratory study provided a broad overview with commercially-focused architects of who was involved, what was said, how said, and when, and therein preliminarily outlined some ideas of likely impacts of values on framing and decision-making for further exploration below. This continues to show values-and-frames presence, and begins to outline potential influences and effects. The findings also indicated that exploring the effects of problem-framing may be relevant to understanding values influences on decisions-as-outcomes from framing in the decision-making process, because decision-makers responded to participant's framed decision-problems when making decisions, potentially supporting the earlier-identified emergent factor #2. Importantly, this study-part initially identified that two stages were critical. Not only were initial frame-building interactions critical to 'setting the stage' for future sustainability (confirming the Pilot Study), but also architect's later framing of project challenges was also critical in precipitating revisions to previous agreements. More specifically, framing critical challenges may impact decision-

making values and subsequent decisions, thus a fifth emergent factor shown in Table 55. The next two parts of this study examine each of these two critical phases of problem-framing in decision-making about sustainability.

Table 55 Key emergent factors from Study-part ES2a

#	Emergent factor	Description and treatment
5	Critical challenges emerged, as second key phase of V-INF	Preliminarily emerged that Framing critical challenges impacted decision-making values and subsequent decisions; examined further in ES2c/§4.3.4.

Studying architects of one type produced useful but preliminary outline findings. Using piloted interview and WeValue group methods permitted emergence of frames' potential influences on decisions and showed some preliminary effects, for further exploration below. Initially identifying critical challenges as an emergent factor was unexpected because the research initially intended to focus on the earlier, key portions of decision-making where major broad-reaching decisions are normally made. But because space was provided and promising leads followed during interviews, this finding was critical to the thesis development, showing that the initial understanding of values and frames relationships was limited. Having identified these preliminary basic parameters toward answering the guiding questions (Table 53), the next study-parts ES2b-ES2c explore two key phases of values influences in Initial Interactions and Critical Challenges. Knowing that potential but preliminary links were made in this study suggests that additional methods were needed to concretely and systematically determine, and map, $(V) \Leftrightarrow [F] \Leftrightarrow [\![DM]\!]$ relationships, thus examined in ES2b-ES2c and MA2 below.

4.3.3 ES2b Exploring values influences on architect's initial framing interactions

The first preliminary study-part ES2a identified gaps in understanding two key phases of values influences in framing sustainability. The purpose of this preliminary study-part ES2b was to explore the first key phase of project decision-making for any themes of early-stage values influences on formulating and framing sustainability in context. This part focused on understanding how values influence architect's initial frame-building interactions with Group G2 commercial architects, guided by the question and purposes in Table 56. Given the process complexity and emergent factors identified above, this study-part also aimed to 'discretise' the framing process more to understand key interactions between framing and values. Highlights of the main findings follow below, with further detail and data extracts in Appendix-4.2.

Table 56 ES2b Guiding question and purposes of this study-part

Category	Element
GUIDING QUESTION	What are the influences of values on architects formulating and framing sustainability as a decision-problem in the 'initial interaction phase'?
Purpose 1	To identify any values influences in architect's formulation and framing of sustainability as a process.
Purpose 2	To begin 'discretising' the framing process to illustrate key interactions of framing in the decision-making process.
Purpose 3	To identify and record any emergent factors for further study.

4.3.3.1 Key findings on initial framing interactions

From evidence of participants' early stakeholder engagement on sustainability, it was found that both practitioner and client values influenced formulating and framing sustainability as decision-problems. Six key themes were identified, outlined in Table 57, with data extracts in the form of case-maps derived from the same data in MA2/§4.3.1 above and analysis matrices in Appendix-4.2.

Table 57 ES2b Six key themes of values influences on architect's initial framing interactions

#	Interaction Theme	Interaction Description
1	Creating and perceiving early impressions, values (opinion-forming)	In addition to eliciting expected project-related information, participants were both subtly probing and openly questioning their clients in their very first interaction for impressions and interpretations of important interpersonal and values information as part of their initial impression-forming. Such recognition and preconceptions of values were interpreted in participant responses and interactions.
2	Perceiving, recognising, and interpreting moves, interest, values	Participants variously recalled how they would perceive others' reactions to their frames, recognising their interest in what was said, interpreting their moves, inclination or favouring, and then responding. Such interpretations of client's thoughts and reactions typically acted as gauging and interpreting mechanisms that provided key interpersonal clues and cues as to how they might calibrate their approach to more successfully interact with their counterpart.
3	Probing for interest and favourable values	Participants could ascertain whether their clients had outlooks or perspectives which are favourable or amenable to their introduction of sustainability measures by their responses, wherein client's sustainability interests and values were actively sought using cues to gauge the importance of sustainability. By eliciting an indication of, or commitment to, a particular recognised sustainability level (e.g., BREEAM level or percentage improvement on building regs), it provided indicators in recognised terms how much sustainability was potentially valued to that client.
4	Identifying needs and favourable values	Clients' values were also interpreted by participants through early interactions as prioritised needs and treated as principal 'project drivers'. When stakeholders' and clients' needs were translated as underpinning values, they likely motivated and precipitated practitioner's circumstantial evaluations and modifications of their own approaches to engagement and framing sustainability.
5	Calibrating frames within initial boundaries	With their initial impressions, participants then began to adjust or attune the 'broadcast frequency' of their messages in discussions to resonate with others. By detecting reactions and responding to other's favourable or unfavourable responses, participants actively sought to build early relationships with others through favourably characterising e.g., design, planning, and sustainability matters. They typically did this through their attempts at conducting their discussions in ways that formulate and frame clients/stakeholders' needs and information that both satisfied the practitioner's needs for project-related and interpersonal information, and are amenable to their clients/ stakeholders.
6	Responding to other's moves: communicating with benefit and values frames	Based on their initial perceptions of others' needs, personalities, and reactions to their framed parlay, participants interactively thus communicated key factors to clients with their frames of sustainability. One way participants communicated sustainability to their clients is through framing the benefits to them, because "benefit" is what these practitioners perceived was valued by their clients.

Early in their initiatory interactions with clients, participants said they necessarily probed for and elicited important information regarding project type, location, the client, their personality, interests, needs, and requirements including budget, area, etc. When they focused on 'creating and perceiving first impressions', client's interests and values were first sought—not at the larger, first team meeting or briefing as previously anticipated. Consequently, first impressions of clients'

values would influence initial frame-building. Interpretation of others' reactions and responses provided participants with an initial basic understanding of their client's interests and boundaries. Positive reactions and interest were interpreted as clients considering a suggestion was potentially of value, whereas negative reactions were interpreted as reaching a boundary in their interest and the suggestion was not valued. Hence, clients' responses can indicate values-based boundaries, thus influencing architects' frame-building processes, which supports the Pilot findings.

When client interest in sustainability was not readily apparent, participants actively probed early, as Table 57, seeking outlooks or perspectives amenable to their introduction of sustainability concepts or measures. Armed with an initial impression of client's sustainability interests and values, these participants would moderate their approaches to framing sustainability towards gaining favourable responses. Important early manifestations—and visible indicators—of practitioner's values were evident in how they engaged stakeholders with sustainability. Participants' probing and clients' interest evidenced both of their values' influence in contextual frame-building with some outline detail provided in Table 57.

One important way participants explicitly identified others' values was through their expression of prioritised 'wants and needs' thus treated as priority 'project drivers' and potential loci of interest in sustainability. Participants indicated that 'speaking to' e.g., commercial needs and drivers necessitated 'commercial awareness' and calibrated frames of decision-problems that 'speak to' and communicate with those commercial needs. Participants regularly scoped client needs and drivers to communicate with them and more effectively solve their design problems, and many responded that they simply ask their clients about their values. Hence, when needs were translated as underpinning values, they

would motivate and precipitate participant's contextual approaches to frame-building and design in response.

With their initial impressions, participants then adjusted or attuned the 'broadcast frequency' of their frames in discussions to resonate with others and avoid alienating them with poorly calibrated frames that either fall on disinterested ears or fail to gain positive response. By detecting reactions and responses, practitioners actively sought to build favourable problem-frames and early relationships with others. They typically did this through interactive attempts at conducting their discussions in ways that formulate and frame needs and information to both satisfy the practitioner's needs for project-related and interpersonal information, and are amenable to their counterparts. Knowing their values from surveys and workshop, practitioner's values were found 'embedded' in their approaches, conduct and interactions with clients as key decision-makers, which influenced their interpersonal interactions by filtering their context-specific approaches to interactions and guiding or calibrating their framing conduct therein.

In responding to other's moves, interviews showed that participants were working to sense and detect interest, and where absent having to "force the issue". Participants then would attempt to interactively communicate key factors to clients through more favourable framing of sustainability, based on the above initial interpretations and reactions. One way practitioners communicated sustainability to their clients was through framing the benefits to them, e.g. with solar panels, because they considered that clients valued sustainability's "benefits". Benefit-frames were functionally identical to 'values-frames', a type of problem frame that communicated concepts of value to the speaker. For instance, three client-practitioner values-frames were 'Achieving Standards/Regulations', 'Cost-efficiency', 'Exercising Responsibility'. Hence, both practitioner and client values interactively influenced formulating and framing sustainability in context. More broadly, the influence of participants' own values on framing can be attributed to

the correspondence of their values-types with the steps and ways they undertook their information-gathering, impression-forming, and problem-framing, based on values' motivational factor driving their interpersonal behaviour. This means that both client and practitioner values influenced frame-building approaches and frames as outputs.

4.3.3.2 Reflection on initial framing interactions

Taken together, the above interactive processing of communicative exchanges between practitioner and client were attributed as recurring, reflexive, bi-directional flows between them. The point at which sustainability entered discussions was typically when needs and interest towards it were probed. Most importantly, these participants typically probed for, elicited, detected, or otherwise found out about their client's values predominantly before the sustainability discussion begins—a subtle but significant point extending earlier explorations. The notion of probing for, identifying, and working within boundaries identified in the pilot study was extended here by attributing potentially specific values influences at specific points in framing. The importance of favourable or amenable responses and perspectives became self-evident. However, tracking, mapping, and keying values' influences into problem-framing processes and frames is useful because it continues to indicate values and frames are present, and preliminarily begins to suggest their influences potentially accessed in practice towards improvements. They provide initial evidence for the first step in discretising the framing process from the architect, as $(V_{AR}) + (V_{CL}) \rightarrow [F_{AR}]$ or simply, $(V) \rightarrow [F_{AR}]$, which answers the guiding question.

Each of the six sub-themes in this study-part introduced the ideas of important facets of practitioner's interactive process of frame building in a client- and project-specific sustainable design decision-problem, with key emergent factors in Table 58. However, amongst them is missing their effects, evident in their clients'

instruction, decision, choice, or selection which, it emerged, most participants clearly identified with rich detail. Knowing them would show how effective practitioners were in identifying and translating client values and needs into appropriate sustainability frames, thus examined further in ES2c/§4.3.4 and SS2a-SS2b/§5.3.2-5.3.3.

Table 58 Key emergent factors from Study-part ES2b

#	Emergent factor	Description and treatment
6	Key Factors in Values recognition contributed to accurate values interpretations	Six key themes of values influences on architect's initial framing interactions were found (Table 57); themes 1-4 and 6 are specifically related to the ways in which architects identify and interpret client and stakeholder values in context, which are likely to be critical to successfully formulating frames within clients' values-based boundaries (theme 5). Examined in SS2a-SS2b.
7	Frames affect clients' decisions	The effects of architect's frames were evident in their clients' instruction, decision, choice or selection which most participants clearly identified with rich detail. Knowing them would show how effective practitioners were in identifying and translating client values and needs into appropriate sustainability frames, thus examined further in ES2c/§4.3.4 and SS2a-SS2b/§5.3.2-5.3.3.

4.3.4 ES2c Exploring two emergent factors: Frame effects on decisions in critical challenges

From ES2b, it emerged that most participants also clearly identified the effects of their formulation and framing of sustainability—with rich, descriptive detail, but important gaps remained unexplained. This gap suggested exploring and understanding how architect's sustainability frames influenced decision-making, with a guiding question and purposes in Table 59. Knowing how frames affected decisions based on the values evident can provide useful indications of frames' relative favourability. Based on the two key phases of values influences in framing sustainability identified in ES2a, the purpose of this study-part was to explore the second: framing critical challenges—the second critical point at which values were most influential in sustainability decision-making. In simplified notation, $(F_{AR}) \rightarrow [\![DM_{SH}]\!] \cdots [\![DM_{CL}]\!]$ and any values-influences therein, or $(V_?) \rightarrow [F_?] \cdots$. Mapping them together then became possible in MA2/§4.3.1 above, with case-maps derived from the same data as this study-part, and data extracts also shown

in Appendix-4 analysis matrices. Highlights of the main findings follow below, with additional detail in Appendix-4.2. Reference to MA2 case-maps in Appendix-6.1 is suggested.

Table 59 ES2c Guiding question and purposes

Category	#	Element
GUIDING QUESTION	Q1	What are the influences of architects' sustainability problem-frames on decision-making (and decisions)?
PURPOSE	P1	To identify any influences of architect's formulation and framing of sustainability decision-problem-frames, i.e., any themes of later influences as frame effects on decisions in context.
	P2	To continue 'discretising' the framing process to illustrate key interactions of values influences on framing in the decision-making process.
	P3	To identify and record any emergent factors for further study.

4.3.4.1 Critical challenges and 'lever' frames

During ES2a-ES2b data analysis, six projects with individual clients were found in sufficiently rich, descriptive detail providing evidence of both values and frames during at least three different decision-making phases: initial design-problem/briefing, initial design decision-making, and later critical challenges. Thence, case designations were adjusted to individual client-projects as architect-client cases and units-of-analysis as decision-making phase with problem-frames and values as variables, and clients' framed decisions as outputs. Most importantly in all six cases, it was found that earlier decisions were made about sustainability based on a set of problem-frames were later overturned based on a different set of problem-frames: critical challenges. From similarly-patterned evidence across all six cases and 34 units-of-analysis, two critical findings were concluded. Earlier frames revealed an initial cluster of values during early decision-making for both architect and client, predominantly aspirational in character. Later frames of critical challenges revealed clients' dormant values or shifted the emphasis of earlier-known values away from or against sustainability during later decision-making by clients based on those frames towards problem-solving. Three

predominant patterns were found across the cases as frame-types based on the critical challenges they communicated, see Table 60. Key findings by type are considered below, with each case examined in detail in Appendix-4.3.

Table 60 Critical challenge frame-types and cases

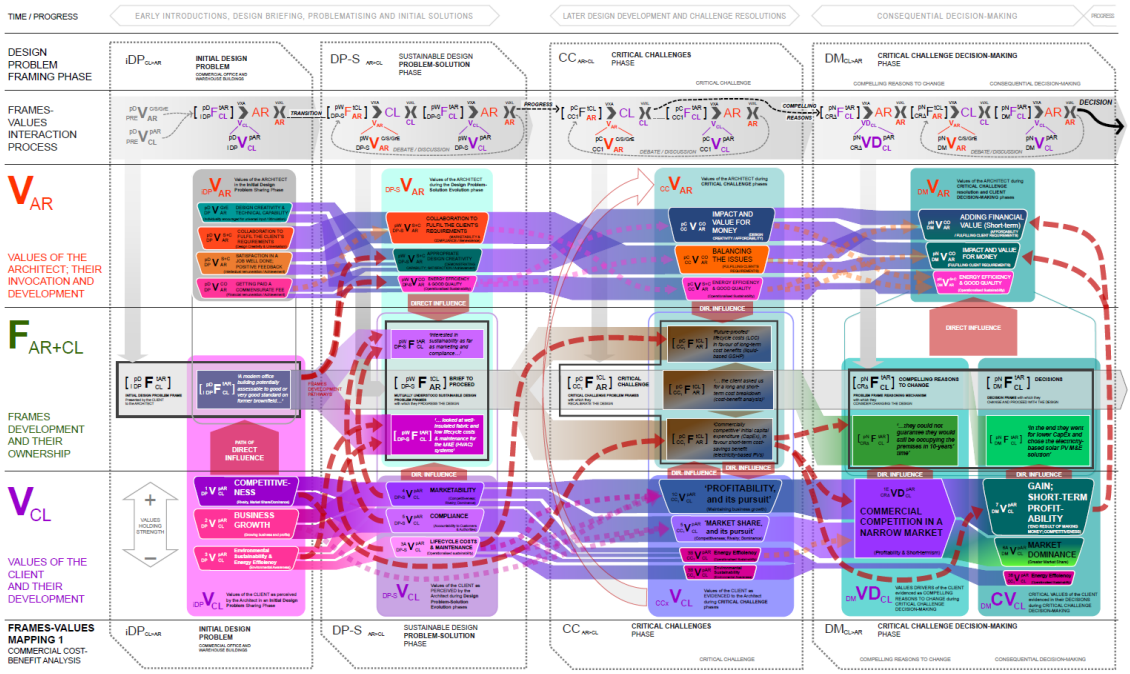
Frame type	Case	Project type	Client experience
Cost and funding frames	Case 1: Cost-benefit Analysis	Commercial office	Semi-experienced (refurbs only)
	Case 2: Cost Plans and Statutory Objections	Barn conversion to resi	Inexperienced
	Case 3: Funding Frames and Funding Pressure	Community hall extension and refurb	Inexperienced
Disagreement and Conflict frames	Case 4: Regulatory Authority Challenge	House extension, refurb	Inexperienced
	Case 5: Compounded Conflict & Impasse	Community centre & resi enabling development	Semi-experienced (refurbs only)
	Case 2: Statutory Objections	Barn conversion to resi	Inexperienced
Compounded Complexity and Challenges frames	Case 5: Compounded Conflict and Impasse	Community centre & resi	Inexperienced
	Case 6: Compounded Complexity	New house in an ancient village	Inexperienced

4.3.4.2 Cost and funding frames

In Case-1 (case-map 1, Figure 33) it was found that based on the initial espoused values of Sustainability, Compliance, Marketing, and Competitiveness, the initially agreed framing of good/very good sustainability standards was challenged by a dual-framed cost-benefit analysis. The decision to proceed based on the lever framing of lower capital expenditure (CapEx) revealed the client's foundational or 'critical values' of 'Drive for Profitability' and 'Market Share', and revealed as 'surface values' those of 'Environmental Sustainability' and 'Energy Efficiency', driven by Compliance and Marketing values. Competing frames of cost, competitiveness, and sustainability suggested the client's 'spectrum boundary' of balance in favour of CapEx, to which compelling reasons for change were tied values-based drivers of competition and short-termism.

In Case-2 (case-map 2, Appendix-6.1), the client's surface values of 'Family Values', Beneficial Use', 'Environmental Sustainability', and 'Energy Efficiency, etc.', were

Figure 33 (below) ES2 Case-1 case-map (for details see §4.3.1 and Appendix-4.2; Apx-6.1 for all maps)


TIME / PROGRESS
EARLY INTRODUCTIONS, DESIGN BRIEFING, PROBLEMATISING AND INITIAL SOLUTIONS
LATER DESIGN DEVELOPMENT AND CHALLENGE RESOLUTIONS
CONSEQUENTIAL DECISION-MAKING
DESIGN PROBLEM FRAMING PHASE
FRAMES-VALUES INTERACTION PROCESS
VAR
VALUES OF THE ARCHITECT; THEIR INVOCATION AND DEVELOPMENT
FAR+CL
FRAMES DEVELOPMENT AND THEIR OWNERSHIP
VCL
VALUES OF THE CLIENT AND THEIR DEVELOPMENT
FRAMES-VALUES MAPPING 1
COMMERCIAL COST-BENEFIT ANALYSIS
iDP
INITIAL DESIGN PROBLEM
DP-S
SUSTAINABLE DESIGN PROBLEM-SOLUTION PHASE
CC
CRITICAL CHALLENGES PHASE
DM
CRITICAL CHALLENGE DECISION-MAKING PHASE
TRANSITION
PROGRESS
COMPELLING READINESS
DECISION
DIRECT INFLUENCE
PATH OF DIRECT INFLUENCE
COMPETITIVE-NESS
BUSINESS GROWTH
MARKETABILITY
COMPLIANCE
LIFECYCLE COSTS & MAINTENANCE
IMPACT AND VALUE FOR MONEY
BALANCING THE ISSUES
'PROFITABILITY and its pursuit'
'MARKET SHARE and its pursuit'
ADDING FINANCIAL VALUE (Short-term)
IMPACT AND VALUE FOR MONEY
COMMERCIAL COMPETITION IN A NARROW MARKET
GAIN: SHORT-TERM PROFIT-ABILITY
MARKET DOMINANCE

challenged by frames of cost and statutory challenge, which revealed their deeper values of 'Beneficial Use for Lettings and Income'. The client decision outcome was a conventional M&E system forced by obstacles in the form of competing value frames of 'Beneficial Use', 'Efficiency', 'Cost', and 'Statutory Requirements'. Competing frames precipitated reduction to mainly conventional systems which, although conventional, "far exceed baseline building regulations… So, it will end up being partly what it could have been, but not anywhere as fully sustainable as it could have been". This client's spectrum-boundary was the notion of beneficial use for financial gain, not running costs or energy use. Compelling reasons to change were tied to values-drivers of gaining additional rent derived from the building's beneficial use—beneficial in terms of financial benefit.

In Case-3 (case-map 3, Appendix-6.1), financing the project, framed as 'fundraising', raised and drove the question of priorities linked to values: what was more important, worthwhile, and meaningful to the end-users? Challenged by fundraising frames, the values of 'Sustainability as Energy Efficiency' driven by 'Responsibility' were trumped by values of 'Fiscal Responsibility' and the practical realities of committees running not-for-profit community hall. The interim client decision outcome was to opt for the most visible and cost-effective upgrades which would help to market a fundraising programme. Competing frames of fiscal and community responsibility revealed these client's spectrum-boundary as 'Project Visibility' and 'Cost-effectiveness'. Compelling reasons to change/choose were tied to competing values-drivers based on the same fundamental value: 'Community Responsibility'. Balancing between the practical challenges of managing an ageing community asset and community funds, the underlying Responsibility values guided these clients to choose options that would promote their fiscal responsibility.

In these three cases, when circumstances or new frames such as these created challenges, they revealed the values most critical to clients. Those new frames

revealing critical values were considered as Lever Frames: frames which precipitated, triggered, or leveraged a critical change to the decision landscape and outcomes. A re-prioritisation of both values and frames can occur with Lever Frames. Here, enacting decisions based on client values was mediated by financing and cost frames which in the first two were also moderated by statutory minimums as a backstop. The question of 'need' posed by the farm-owner pointed to an interesting challenge faced by these participants. Justifying the need to push the limits were couched in terms—i.e., frames—which failed to resonate with client's foundational values in three conditions: when those values were obscured to their holders; when the reasons for exceeding statutory limits were linked to the architect's values; and when difficulties in so doing were considered linked to financial resources which were ultimately more highly valued.

4.3.4.3 Disagreement and conflict frames

In Case-4 (case-map 4, Appendix-6.1), competing frames of statutory crossroads between renewables requirements but problematic visual impact, challenging client's sustainability and ethical values, revealed their critical values of Meeting Core Family Needs for new accommodation. With a spectrum-boundary of potential for authority's rejection, compelling reasons to change were tied to the balance between competing values-drivers: Concern for Family and Concern for Project Loss. The client decision outcome was to scale back the sustainability measures to statutory minimums whilst retaining their valued materials and insulation as minimums.

In Case-5 (case-map 5, Appendix-6.1), the decision-problem was communicated through frames of a) modernising their 'massive, inefficient building' whilst providing them with a "21st-century addition", b) sustainability being "in their interest" and as a moral imperative they 'should be doing'. These frames, intended to speak to the client's organisational values of 'Ethical Responsibility', appeared to

resonate significantly until faced with effectively an ethical dilemma, fuelled by disputed third-party priorities. These serial challenges, framed as "obstacles" rather than hurdles to overcome, revealed the client's critical values of 'Concern for Human Welfare', despite their valuing sustainability being driven by a contextual form/interpretation of 'Responsibility'. The conflict linked to obstructive behaviours of authorities and advisors ultimately served as this client's spectrum-boundary; so too did architects' goodwill wane. Compelling reasons to change were linked to the client's principal values-drivers of 'Concern for Human Welfare', and a palpable frustration with other's disobliging lack of cooperation: "at the end of the day what should've had happened is somebody should have taken the conservation officer on one side and said you are being ridiculously obstructive—*there is no reason not to do this* (original emphasis)". Ultimately when faced with such conflicting advice and interrelated system complexities, the client became fed up and the project proceeded with 'conventional', self-contained efficient gas boilers and 'an uplift on the building fabric'. Compounded conflicts resulted in the client's robust sustainability commitment being reduced to accept conventional systems and now-basic standards. Multiple competing frames and agendas created by incremental challenges imposed barriers to sustainability where conflicting problem-frames were ultimately unresolvable and concern for human welfare prevailed.

Case-2 on cost plans and statutory objections also supported these conclusions on disagreement and conflict. The various interpretations of such a multi-faceted value as 'Responsibility' point to the challenges in framing sustainability, itself a multi-faceted organising concept with multiple context-specific applications. 'Ethical Responsibility' interpreted as a moral imperative that clients 'should be doing' appears to compete with 'Community Responsibility' aligned with their 'Concern for Human Welfare'. This points to the notion of architect's challenging role as interpreters, translators and perhaps arbiters of ethical, legal, sustainable, practical, and aesthetic judgement, whilst balancing conflicting demands and

priorities. It also suggests that together values-and-frames, when played out over a series of interactions, frequently presented architects with compounded conditions in which problem-frames were contested because of complex, interwoven challenges and values variations.

4.3.4.4 Compounded complexity and challenges

In Case-6 (case-map 6, Appendix-6.1), the architect's more positive sustainability problem-framing attempts were thwarted by not only statutory authority concerns of preserving the local historical character, but also client concerns about loss of accommodation opportunity. The client's initially-espoused values were challenged first by frames of the practicalities and cost realities of sustainable design aspirations, and later by framed concerns of planning officers also linked to the practicalities of realising modern, sustainable design in an ancient village with heritage restrictions. These challenges revealed 'Country Lifestyle' values as surface, the 'Modern Conveniences' values as slightly deeper, and both trumped by linked 'Financial' and 'Accommodation' values as critical or foundational values. Ultimately the client decision outcome was in favour of a conventional house, meeting the minimum historic village requirements, complete with faux decoration.

Competing frames of practicality, cost, and statutory challenge became this client's spectrum-boundary, where compelling reasons to change were tied to their basic, foundational values-drivers of financial and accommodation needs. Sustainable design issues new to this client were compounded with external conflicts to create a set of complex conditions. This resulted in the client's initial sustainability commitment being reduced to accept conventional systems and basic standards. Case-5 on compounded conflict and impasse also supports these conclusions on compounded complexity and challenges. With the church community centre and flats development, the conflict and impasse could be seen similarly to Case-6 where technical design challenges inherent in sustainability measures

compounded with advisor's and consultant's conflicts to create a level of complexity consequentially debilitating for the project.

4.3.4.5 Reflection on values influences during critical challenges

New insights and emergent factors (Table 61) were formed regarding critical, driving values and their holding-strengths, exposed through frames associated with a move or decision made in response to a critical event or challenge. This begins to suggest that the effectiveness of a frame may be dependent on how strongly-held is the value being targeted or activated. They also suggest important interpersonal values-and-frames relationships as missing links from sustainability design decision-problems through communication to potential solutions and decisions.

Table 61 Key emergent factors from Study ES2c

#	Emergent factor	Description
8	Trigger frames of Critical Challenges	Trigger frames emerged in Critical Challenges and were mainly negative with negative results. Trigger frames are considered a type of frame causing a frame effect, negative in these cases. Examined further in ES3/§4.4 & SS1-SS2/§5.2-5.3.

A useful technique capable of identifying with some certainty which values influenced which frames, how strongly, and in relation to specific actors, inputs, conditions, and broader-scope scenarios, was through a critical challenge—something that confronted, contested, disputed, opposed, or defied the earlier-held values and 'agreed' frames. It also became clear that the values-and-frames influence mapping and the use of relational influence operators in earlier data analysis led to identifying critical challenges and lever-framings. Challenge interactions were the analytical key to unlock prioritised values clusters in sustainability decision-problem-framing puzzles, where spectrum-boundaries suggest contextual choice-space limits like regulations, policy, cost, risk, and conflict.

These findings suggest that project decision-making typically required evaluating sustainability options, alternatives, and applications for framing and deciding/choosing, indicating possible further links between values-frames-

decisions, thus investigated below. The findings also more strongly suggest that clients' decision-frames manifested their values. Together the relationships might be represented as $[F_{AR}] \rightarrow \langle (V_{CL}) \rightarrow [F_{CL}]^{DM} \rangle$. Later study-parts will systematically map these relations to examine e.g., close correspondence, direction, strength, meaning. Values priority shifts were initially identified as potentially important effects of critical-challenge trigger-frames and client values interactions, which become clearer through MA2, and MA3-ES3 mapping and analysis.

4.3.5 Phase transition: Implications and impacts

4.3.5.1 Interpretation and reflection

This preliminary exploratory study successfully began to locate some values influences in participants' sustainability framing processes toward securing decisions about sustainability, but some influences were unexpected. Routine decisions, projects calling on prior experience, and everyday challenges tended to require micro-evaluations of sustainability for both architects and clients, where these influences on both framing and decision-making typically went unnoticed. Whereas novel decisions, new projects with new and/or inexperienced clients bearing on less experience, and critical challenges tended to necessitate more deliberate sustainability evaluations with more pronounced influences on framing and decision-making. Because the values-based sources of such influences were typically overlooked, it receives much less attention than it deserves, considering values' potential significance in establishing the foundations for sustainability framing and decision-making, where construction clients emerged as clearly focal decision-makers from architect's perspectives.

Study-part ES2a sketched various preliminary parameters of project decision-making processes by outlining values influences in architects' initial sustainability framing interactions. It emerged that two phases were key in formulating and framing, then deciding about sustainability. The initial, stage-setting interaction

set broadly-scoped boundaries or a 'project-frame' for sustainability with communication frames expressing various meanings which could set the decision 'space' and tone for decisions. Later framed critical challenges impacted decision-making values and subsequent decisions attributed to the same underlying mechanism—frames communicating to values.

Thus, Study-part ES2b outlined some potentially important influences of values on architects' initial sustainability framing interactions to understand how frames were formed and influenced by values, indicating the potential usefulness when some participants recognised client values in context. Then, based on basic parameters and study of initial influences, part ES2c built on those findings and revealed how framing later critical challenges could affect decision-makers via their values, whereby some earlier-established decisions were overturned always for sustainability reductions to previously-agreed targets in all six architect-client cases identified with Group 2 commercially-led architects. These culminated in a useful but time-consuming examination of framing experience process mapping, which revealed how the ordering of frames mattered because values are likely to create influence pathways via frames to decisions between architect and client. Together the pilot and preliminary exploratory studies revealed seven emergent and confirmatory factors, see Table 62.

Table 62 Summary of Key Emergent Factors from ES2 and MA2

Study, first identified	#	Emergent factor	Description
ES2a V-INF Basic Parameters	5	Critical challenges emerged, as second key phase of V-INF	See Table 55
ES2b V-INF → F_{AR}	6	Key factors in values recognition contributed to accurate values interpretations	See Table 58
	7	Frames can affect clients' decisions	
ES2c F_{AR} → CL	8	Trigger frames emerged in Critical Challenges	See Table 61
MA2 Process Mapping V_{AR}→[F_{AR}+F_{CL}]←V_{CL}	9	Discretising process using symbols and pathways	See Table 52
	10	Sequencing of frames to values emergence matters to decisions	
	11	Values can create influence pathways via frames	
	12	Values can manifest contextually in hierarchies in response to frames	

However, on reflection during this transition, one important key factor emerged. Reflecting on these interviews, architect's initial frames of sustainability, e.g., with respect to regulations and statutory development controls, seemed to set artificial but unclear limits or boundaries to the possible and likely options available for clients' choices in ways that are more meaningful to them, thus influencing decision outcomes. From the second group of interviews, those choice 'options' were further constrained when critical challenges were framed, with clear impacts on the values clusters evident during associated decision-making. Taken together with the process maps, they begin to suggest a thirteenth emergent factor (Table 63): artificial, tacit constraints, limits or boundaries imply something lacking—more room to establish choice options more closely aligned or compatible with values, which because values already represent enduring, meaningful actions/goals, could potentially be more meaningful to decision-makers and therefore facilitate their better, more individually-meaningful choices about sustainability. Thence, this potentially missing 'space' and making room for more individually-meaningful choices became a critically important preliminary insight for the thesis. This and earlier key emergent factors are examined in a structured exploratory study, ES3/§4.4 below; thus the second phase concludes.

Table 63 Key emergent factor from reflection on transitioning to the next research phase

#	Emergent factor	Description and treatment
13	**Lack of room for more meaningful choice-options**	ES2 and its case-map analysis showed numerous influences and constraints; suggested that there is a lack of room to establish more meaningful choice-options more closely aligned with values; Examined in ES3.

4.3.5.2 Implications

These preliminary study-parts showed the possibility of various influences, effects, and impacts of values-and-frames interacting in the context of project decision-making about sustainability for the participants and cases identified. To support, refute, or extend these findings, further studies would then begin to examine the key issues more systematically. This implied that the next stage should be designed for more structured exploration first of typical influences to identify which influences might impact any existing space available for meaningful choice-options from the perspective of values-and-frames. Such structure would help identify any prevailing or underpinning principles of values-and-frames interactions and effects with these key emergent factors which may then help to understand how more room might be made for more meaningful choice-options.

4.3.5.3 Transitioning to more Structured Exploratory Study

The structured exploration first requires capturing any typical influences in decision-making about sustainability, to then evaluate the role and significance of values-and-frames influences amongst a set of typical influences. This can also serve to pinpoint the meaning of influences in such a context. If it emerged that other factors were in fact more influential, then a choice would be made to follow the lead of new emergent influential factors with a lens of values-and-frames, which may help to identify their role in any new influences. The study then examines the key factors, their interlinkages, and effects.

Thus, a three-part study was designed to jointly explore key emergent factors from ES1-2. First, how typical influences in decision-making impact the 'space' available

or possible for individually-meaningful choice-options and thus choices. This can usefully be abbreviated as 'space for meaningful choice', where a similar concept coincidentally exists elsewhere (see §6.5.4). Once a clearer picture was formed of the scope, role, and significance of values' and frames' influences (if any) on such spaces amongst any other typical influences, then only those interviews containing retold decision-making discussions between architect, client, and other stakeholders would be analysed. Such an analysis would need to first show more precise values, frames, their interrelations, and effects—thus the second part. Only then could valid claims be made about the presence and impacts of values-and-frames influences on any available space for meaningful choices, and potentially where to find or make room for improvements.

4.4 Study ES3: Structured exploratory study of key emergent factors

Following from the above transition analysis, this three-part study in Phase 3 (see Figure 2), explores existing data from Groups 1-2 combined to search in a more structured manner for any typical influences in decision-making (Study-part ES3a, §4.4.1), values-and-frames roles and significance as influences (ES3a), and how they impact spaces and room for improvements in meaningful choice-options and choice (ES3b-ES3c, §4.4.2-4.4.4). This may also serve to support the validity and reliability of earlier exploratory findings on values-and-frames influences. Part ES3b was developed in parallel with MA3 (§4.3.1) and reports its findings.

4.4.1 ES3a Typical influences and 'Space for Meaningful Choice'

Gaps identified in the previous analyses highlighted the need to evaluate the relative significance of values-and-frames influences amongst *any* typical influences found in sustainability decision-making. If other factors emerge as

more influential, they will be evaluated against earlier findings to reasonably and justifiably adjust the future research pathway. Thus, this study-part was designed for a structured exploration of decision-making influences with a values-and-frames lens, which would also reveal important constraints. From this, space for, and the importance of, meaningful choices, and the influences values-and-frames on them, would later emerge (ES3b-ES3c). To understand a broadly-scoped range of influences, data included 16 participants from both Groups G1-G2 (see Figure 3).

4.4.1.1 Main findings on typical influences

Amongst a cacophony of noise and disorder in complex, dynamic, and interactive, overlapping, layered processes and interactions, numerous influences were found across Group 1-2 interviews. Many influences were typical and applied to several situations, and some echo existing research. However, when examining those same influences through a lens of values-and-frames, clear patterns emerged to reveal nine key factors shown in Table 64, each described in order below.

Table 64 Key factors identified across typical influences in sustainability decision-making

#	Key factors
1	Key stakeholders are numerous, but clients remain key
2	Choice boundaries are formed from stakeholder influences
3	Typical Influences in decision-making reveal twelve themes
4	Influences in Architect-Client communication are dominant and potentially 'accessible'
5	Influence clarity emerged through values-and-frames lenses
6	Values can be treated as Raw 'Inputs' and/or as influences
7	Frames can be treated as Raw 'Inputs' and/or as influences
8	Treatment and framing of key factors began constraining choice-space
9	Typical challenges behave as influences

4.4.1.2 Key stakeholders

To know with whom architects engage most on sustainability, participants were specifically asked, a starter-list compiled, then appended with any other stakeholders coded from interview, see Table 65. Participants' reports of decision-making stakeholders showed that clients and statutory authorities were mentioned most frequently, followed by key sustainability-related consultants,

then builder-contractors. This clearly confirms earlier findings. Notably, the high number of Client-Developers mentioned (51/225) plays forward in later evidence for typically low interest in sustainability, whereas sparsity of End-users/ Occupiers (17) may signal missed opportunities to establish meaningful decisions about longer-term impacts earlier. Thus, key stakeholders are numerous, but clients remain key.

Table 65 Participants' reports of decision-making stakeholders and frequency of mention

Category	Stakeholder Type		# Mentions
CL	Clients	174	225
	Client Developers	51	
SAC	Local Council / Planning Authority		66
KC	M&E Consultants (Services/MEP), Sustainability Assessors (BREEAM, CfSH, etc.), SAP Assessors		28
SAC	'Government'		23
CON	Contractors, Builders, Housebuilders		20
EUO	End-users/Occupiers		17
CLF	Client's Financial backers / Third-party funders		10
KC	Quantity Surveyor (QS)		6
AG	Estate Agents		4
SAC	Planning: Senior Officers; Head of Planning		7
SAC	Statutory Consultees: Members of the public and Constituents; Statutory authority consultees (other departments)		4
KC	Planning consultants		2
SAC	Planning: Leader of Council, Council Members		2
SAC	Planning: Junior Officers		1
Category Abbrevs:	*CL: Clients* *SAC: Statutory Authorities and Consultees* *KC: Key Consultants* *CON: Contractor-builders*		

4.4.1.3 Choice boundaries from stakeholder influences

When analysing for stakeholders, patterns of participant's statements were noted about the influences of three key stakeholders which typically set boundaries for project decision-making. Early or front-end, statutory stakeholders set policy and regulatory boundaries within which architects and their clients, and later contractor-builders can make project decisions. Importantly, architects themselves constrained decision-making or choice 'space' when they typically framed regulation as either goals as ceilings (AR04,08,09,10) or backstops as thresholds (AR03,07,10). The treatment of regulation in these ways was directly related with the architect's type: goals/ceilings as predominantly commercial-focused; and backstops/thresholds as design-focused or sustainability-focused.

Within statutory boundaries, spaces for meaningful choices were later constrained or recalibrated by contractor-builders. Challenges in tendering and construction frequently led to reducing cost and consequently sustainability measures to minimum CapEx. This typically resulted from tender higher costs than budgeted (AR02,03,07,08,09), construction practicalities (AR02,07,08,09), or contractors offering cost-savings through sustainability reductions (AR07,08,09), such as reducing insulation, simplifying heating/ventilation or renewable energy systems. These negatively impacted their projects' overall long-term sustainability. This therefore suggests that 'boundaries' to the available space for clients to individually consider and choose sustainability for their own reasons can be formed from influences based on the nature of stakeholder's involvement. Taken together, this strongly suggests that architect-client interactions were the only real spaces remaining to establish more individually-meaningful choices. This led to considering, within such boundaries, what typically encourages or deters the room available for individual considerations of sustainability's meaningfulness in decision-making, thus further examined below.

4.4.1.4 Typical Influences in decision-making impact spaces for meaningful choice

Importantly, participants were asked and space provided for them to describe general, typical, and specific influences; then interesting and relevant threads were followed about when influence arose or faded, alongside probing for potential inflection points when sustainability shifted (say, from being supported to supplanted). This yielded a range of influences, organised in Table 66 which helped detect any patterns related to values-and-frames influencing meaningful choice.

Table 66 Twelve themes of typical influences

Themes	Category	Class
Interpersonal relationships	AR+CL, relationship	Interpersonal
Knowledge of and/or experience with an individual	AR+CL, relationship	
How much AR wants to push – related to how much they're concerned about SD, what AR wants out of their work (or values in their work), etc.	AR individual characteristics; AR Values	Individual
Client's (CL) interests in sustainability/sustainable design/sustainable development (SD);	Client & Client's Values; AR communication skill;	
How much interest, vs. how much resistance, or tolerance	Individual characteristics; AR+CL relationship	
Communication & Listening skills	Communication; Individual characteristics	Individual/ Interindividual
Interaction / interchange content, choosing and timing what to say to whom and why	Communication; Individual characteristics	
Communication strategy & strategic communication skills	Communication; Individual characteristics	
Subjective communication for persuasion	Communication; Individual characteristics	
Nature of CL, nature of project	Client and project types	Foreground
CL Knowledge, understanding of obligations (and AR's ability to detect)	Client experience, knowledge; Communication	
Experience as CL, as AR; Experience delivering SD	Experience of AR,CL	
Local politics and politics of getting a planning consent	Local Authority/Politics; Interpersonal relationships	Background

LEGEND: AR = Architect-participant; CL = Client of the architect; SD= Sustainability; sustainable designs

Numerous constraints manifested as 'background' decision conditions (economic, political, planning, regulatory context, etc.); 'foreground' project conditions (project location, client experience, individuals' roles, phase, etc.); and individual characteristics—which bound the space available to ground sustainability's meaning(further explored below). Whilst 'background' conditions were fixed and therefore inaccessible at interindividual levels, and 'foreground' conditions were relatively fixed, but individual characteristics were both accessible and potentially leverageable.

Participants reported that interpersonal relationships were most significant, accounting for most typical influences, with individual values and knowledge/experience the next-most significant. This suggests that knowledge and information are not enough to establish sustainability meaningfully, and that

skill is needed in both listening and applying knowledge appropriately within interpersonal relationships which are co-constructed by contributions from both individuals. Principal among those relationships remains architect-client communication as principal interaction 'spaces' with the most potential for meaningful choice, where interlocutors can explore sustainability's individual meaningfulness. This was noticed because of the unexpected clarity and volume with which participants spoke of relevant influences in their communication processes and their clear focus on clients, therefore examined next.

4.4.1.5 Influences in architect-client communication

Many typical influences showed that interpersonal relationships are normally constructed and underpinned by communication, Table 67 below. Of these influences, skill in the two-way, architect-client exchange or interaction accounted for 10-of-14 themes of communication influences. This suggested that architects recognised the importance of these interactions, where several participants identified key features, including what they do to communicate sustainability, and what they are looking for as a result. Listening—and responding appropriately—in the interaction; subjectively communicating for persuasion, thus listening as well as speaking in subjectively responsive ways; getting recognition/understanding, receptivity; indications that "I'm listening". Some participants explicitly indicated they were typically sensing receptivity or reactions as cues or indicators that their messages' meanings were welcomed, and they were getting what they wanted/needed out of a discussion. But these interpretations also admit a thinly-veiled underlayer of values.

Table 67 Typical communication influences

Orig. order	Coded Influence Theme	Focus/Category ↓	Values Cat. (Table 68)
2	AR ability to draw out from CL: knowledge levels, understanding, 'what they're looking for'	Communication & Listening skill; Interchange	[V1,2]
11	Getting CL recognition/understanding; Receptivity; 'I'm listening'	Communication & Listening skill; Interchange re: Receptivity	[V2]
10	Find CL unique selling point (USP) for the benefit, whether emotional or financial	Communication & Listening skill; Interchange re: USP, benefit	[V1]
5	Establishing what is of prime importance to CL – what matters most to them	Communication & Listening skill; Interchange re: Values; priorities	[V1]
6	Establishing the level of importance – priority of key factors	Communication & Listening skill; Interchange re: Values; priorities	[V1]
4	AR ability to communicate the benefits – i.e. how they communicate benefits: opportunity vs requirements	Communication of Benefits	[V2]
1	AR ability to communicate their knowledge	Communication of Knowledge	[V2]
13	Really important decisions face-to-face (FTF): eye contact, body language, space to elaborate	Communication Strategy & Skill; Interchange	[V3]
14	Sensing contexts and timings	Communication Strategy & Skill; Interchange	[V1]
12	Initially developing rapport FTF - liking one another leads to easier interactions later	Communication Strategy & Skill for Rapport	[V3]
3	AR ability to listen—and hear, understand and interpret others' communication (over own voice)	Listening skill	[V1]
9	"Psychology of reading people"; interaction & reading body language; hearing & listening	Listening skill: Reading people; Interchange	[V1]
7	AR ability to communicate & persuade in subjectively convincing way	Subjective communication for persuasion	[V3]
8	AR understanding the emotion in something; draw on that to persuade CL - getting them 'on message'; Persuasion	Subjective communication for persuasion	[V3]

4.4.1.6 Influences through values-and-frames lenses

When viewed with a values lens, each influence theme could be re-thematised using values-based interpretations, as Table 68. This suggests that participants were already noting, speaking to, and interacting with others' values. But none explicitly mentioned this fact without prompt or guidance. Because of their potential significance, typical communication influences were re-examined for alternative patterns. Then, different themes emerged based on logical dimensions identifiable in participants' communication processes. The influences from Table 67 can then be thematised based on values-and-frames, as Table 69.

Table 68 Values-based interpretations of communication influences

Category	Values-based interpretations	Cross Ref, Table 67
[V1]	Listening for, drawing out, and establishing values	2, 3, 5, 6, 9, 10, 14
[V2]	Getting recognition, understanding, receptivity, rapport by 'speaking to values'	1, 4, 2, 11
[V3]	Subjectively convincing communication as 'interacting with values'	7, 8, 12, 13

Table 69 Alternative themes of typical communication influences with a Values-and-Frames lens

Category	#	Theme
Objective of Listening (for what AR is listening)	O1	Establishing CL values, "what is of prime importance [to CL] [AR10]"
	O2	Establishing CL values, "the level of importance" – priority/priorities
	O3	Sensing contexts and timings
	O4	Making eye contact, reading body language
	O5	Establishing CL knowledge levels, understanding
	O6	Gaining CL recognition/understanding of AR's message
	O7	Establishing CL's purpose, "what they're looking for"
	O8	Establishing CL's "unique selling point (USP) for the benefit, whether
	O9	emotional or financial"
		Sensing Receptivity – does "the message warm within them"
Purpose of Communicating (reason, intention of that communication)	P1	Establishing Receptivity – does "the message warm within them"
	P2	Persuading
	P3	Developing rapport
	P4	"Understanding what they're like and what they might think like in all sorts of
	P5	ways [AR08]"
	P6	To be liked [AR08, AR10];
		'Bringing them along with you on the journey' [AR07].
Mode of Action	M1	Listening
	M2	Sensing
	M3	Reading people, understanding people
	M4	Finding out information (both interpersonal and physical)
	M5	Understanding their emotion
	M6	Recognising
Subject (what is communicated by AR)	S1	Regulations, minimum requirements
	S2	AR's own sustainability knowledge
	S3	Opportunities for sustainability
	S4	Benefits of sustainability whether emotional or financial
	S5	Context-specific sustainability applications
	S6	Importance of sustainability
Quality of outbound communication	Q1	Subjective (relevant to 'what they're looking for')
	Q2	Unique

This reveals several interesting patterns. With client values as two 'objectives' of listening, this reinforces ES1-ES2 findings that architects were already seeking and employing values information. The language used to represent this phenomenon, "establishing what is of prime importance to clients" and the characterisation of values as "client priorities or drivers" signifies that values information is already being employed but remains unrecognised. The "message warming within them"

representatively explains both what participants typically aim for, and how they can know if their communicating was effective. Thus, when viewed as establishing meaningfulness from a values-perspective, the architect-client decision-communication process is replete with opportunity which architects inherently practice but do not seem to explicitly recognise.

4.4.1.7 Raw 'inputs': Values

Values proved to be key in architect-client discussions about sustainability and were traced directly and indirectly in the interviews. Selected evidence is shown in Table 70-Table 71, with additional details and representative quotes in Appendix-4.2. These tables showed that, in all but one example, various instantiations of values associated with Client Satisfaction and Sustainability were either most-frequent or high-priority for these architects; whilst the former is unsurprising, the latter is a notable rejoinder to sceptics who divorce sustainability from commercially-oriented practices. However, this presents a significant tension for those participants whose clients were either less-interested in sustainability or more-interested in profit and cost-control; because responses also converged on the view that sustainability costs money. It could play forward in how participants' values manifest and influence the messages they frame about sustainability for decision-making, suggesting client satisfaction might be prioritised over

Table 70 Typical example values of architects as deduced from their transcripts

#	Architect's Values
1.	Client Satisfaction
2.	Sustainability
3.	Good Design
4.	Good Communication
5.	Responsibility,
6.	Working with Likeminded People/ Being Liked/Likable
7.	Honesty
8.	Leadership
9.	Practicality/Pragmatism
10.	Intellectual Stimulation/Opportunity

Table 71 Typical samples of client values from participants' retold discussions

#	Client's Values
1.	Cost-effectiveness
2.	Delivering Value-For-Money
3.	Feasibility
4.	Financial Viability (and 'Fundability')
5.	Saving Money
6.	Fulfilling needs
7.	Profit, Return, Turnover, Profitability, and similar variations
8.	Statutory Compliance (threat of loss)
9.	Tradition/Traditionalism
10.	Energy Efficiency
11.	Benefits of Sustainability (usually to themselves),
12.	Marketability of Sustainability (also Reputation)
13.	Sustainability, but only if convenient or easy.

sustainability. These values are unsurprising in a services business context. However, the satisfaction-sustainability tension presented an opportunity to reflect and re-examine participant's interpretations of their client's values for relationships like association or sympathy, which could provide opportunities for both meaningfully establishing sustainability's significance and achieving client satisfaction.

Typical coded values statements of client values as interpreted by participants, Table 71, are perhaps somewhat unsurprising, but useful in their prioritisation to show their values-types in this context and their relation to concepts like cost/profit/gain, viability/compliance/risk, and characteristic manifestations of sustainability-type values. (Further detail of named stakeholder's thematised individual values frameworks as lists of coded values statements and themes are included in Appendix-4.3).

4.4.1.8 Roles of values

Raw data as content or 'inputs' into framing and decision-making clearly indicated that values—as motivators and guides of human behaviour towards what individuals consider most worthwhile, important, and meaningful in their conduct—have important but unclear relationships to sustainability without some means to contextualise them and identify track their effects, i.e., in framing and deciding about sustainability, meaningfully. It was interesting to observe a clear signal that client values were key to establishing meaningful choice-options and choices, explicitly raised first by AR07, suggesting that in client's decision-making everything is filtered through values as a screen. For instance, on one project, the client and contractor were evaluating success through potentially opposing values-lenses: lifecycle cost and maintenance as end-user, versus buildability and lowest CapEx as contractor. Both affected sustainability, thus echoing the importance of establishing and working with client values to maintain and protect decisions affecting sustainability. This presents a dichotomy between profit-inclined

commerce and sustainability in which issues like these illustrate the challenges internally and externally, where one must choose.

Whilst simple generalisations could be made about such values, they remain decontextualised and unprioritised, thus imparting little else. Contextualising them, i.e., in project decision-making, may bear fruit by considering the potential role of frames in meaningful choice-options and their choices via values. Because clients are fee-paying, participant's values unsurprisingly included being paid and client satisfaction, potentially implying having to forgo one's own values if conflicting, thence a difficult choice. Thus, intrigue at the point of inflection, where examining communication frames may give context to these values inputs.

4.4.1.9 Raw 'inputs': Frames

By examining the frames used to communicate sustainability with a values lens, the relationships between values and frames would then be determined. This will show the impacts of frames with values in establishing sustainability (in the context of meaningful choices). Participants clearly placed importance on interpersonal communication in sustainability decision-making. Earlier findings initially showed three key, interlinked factors: frames of communication may have influence on decision-making and available choice-space; frames convey meaning imbued in raw information by the speaker; and the way sustainability is framed appears to affect both the available choice-space and the outputs of choices (decisions) via the values of the problem-framer and listener-decisionmaker, respectively. To know more about this phenomenon, participants were also asked how they characterise, differentiate, emphasise, treat or 'frame' sustainability in various stakeholder decision-making contexts.

The results showed important differences in interpretations and understandings of equivalent concepts or similar connotations, Table 72. On further inspection, these

results show mainly 'static' information about what was framed—except for Statutory Requirements. Based on earlier indications, it was noted that when speaking about regulations to clients, the ways participants characterised and treated some factors in discussions was qualitatively different from other captured information in how participants characterised equivalent facts and ideas. This difference suggests that there could be another layer or lens missing through which the communications and comprehensions get consolidated, calibrated, and/or coordinated, leading to mutually agreeable design decisions. Therefore, framing of key factors like regulation were examined more closely, below.

Table 72 Architect's typical frames of sustainability [F_{AR}]

ISSUE FRAME *(With these participants, sustainability is framed in terms of this kind of issue)*	**FRAME APPLICATION** *(Sustainability is framed in terms of this kind of contextual application)*
PHYSICAL, TECHNICAL	
Physical constraints	Groundwater levels (re: use of GSHP)
	Adjacencies of buildings, properties
Legal constraints	Ownership or boundary issues
Statutory requirements	Regulations as line in the sand, know what we're signing up to
	Aiming for Regulations as targets
	Planning regulations as demands
	Planning regulations as starting-points
	Building regulations
Voluntary Standards and Assessments	BREEAM for offices; BREEAM public buildings
	CfSH for residential; just another hurdle or hoop
	CfSH Code 5 high energy efficiency; ambitious
	Passivhaus for residential, didn't previously meet Building Regs
Passive, static measures	Building orientation; solar orientation
	Natural daylight
	Fabric; Envelope
	Thermal mass
	High insulation
	Airtightness
	Washing lines above bathtubs
Active, non-static measures	Renewable Energy: PVs, Wind Turbines, Solar Thermals, GSHP, ASHP, CHP; Biomass Boiler; Open fire
	Heating and cooling system, wet or dry
	Heating; heating efficiency
	Lighting; lighting efficiency
	Greywater recycling
	Green travel plans; Cycle to work schemes
Efficiency	Energy efficiency; Energy use; Energy conservation
	Water efficiency; Water use; Water conservation
	New building fabric
Impact	Carbon Footprint; CO2 emissions
	Transport
	Visual Impact
Waste	Waste to energy
	Waste of resources

(Continued below)

Table 72 (cont.) Architect's typical frames of sustainability [F_{AR}]

ISSUE FRAME *(With these participants, sustainability is framed in terms of this kind of issue)*	**FRAME APPLICATION** *(Sustainability is framed in terms of this kind of contextual application)*
Recycling	Building and/or components
	Materials
	Greywater
Lifespan	End-of-Life
	Lifecycle of building, materials, costs
	Lifecycle costs
	Lifespan, longevity, of building, materials
HUMAN: INDIVIDUAL, INTERPERSONAL, SOCIAL / GROUP / TEAM CATEGORY	
Needs, wants, desires	We need to satisfy planning requirements for renewables, sustainable transport, affordable housing, etc.
	What levels of sustainability do you want to achieve?
	Do you want to live in a sealed box or in an open courtyard space?
Moral and ethical grounds	Higher-self
	Ethical thing to do
	Ethics
	'making an impact on the world for the better'
Responsibility to someone	Concern for future generations
	Concern for the neighbourhood
	Community
	Parishioners
	End-users
	Patients / public, difficult to achieve with NHS budget
Responsibility to something	Concern for natural environment
Management pressure / agendas	Management pressure (PM wants sustainability, Management does not)
	Competition for market dominance
Conflicting agendas	Local authority representatives provide conflicting advice
Conservation	Existing building fabric; Retain & enhance/upgrade
	Resources, Natural
Money, Costs, Financial issues	Funding pressure
	Spending
	Cost savings, lifecycle
	Cost savings, maintenance and running costs
	Cost, maintenance and running
	Cost, capital expenditure (CapEx)
	Cost, burden
Benefit	Cost-to-Benefit
	Financial benefit
	Marketability benefit (e.g. image, reputation)
	Some benefit to the client (unspecified)
Market demands	Commercial market requirements for efficient buildings
	Residential & Commercial markets lack of sustainability value
Value	Financial value
	Marketing value
	Biodiversity value

4.4.1.10 Effects of framing key factors

Through their communication frames, three key factors emerged as key in participants treatment related to their perceived significance in sustainability decision-making: regulation, cost, and risk; two representative patterns emerged with each, Table 73. When participants used various terms such as Budget,

Funding, or Cost, their treatment as positive or negative was one perceptible facet of their frame. The effects of treating regulation as starting point/threshold or target/ceiling can also be interpreted as positive and negative, respectively. The effects of framing sustainability measures as 'low-hanging fruit' to cut high tender costs—as cost frames, were negative for project sustainability. Alternative frames could have reinforced sustainability's importance through a longer-term perspective which emphasised other alternatives, such as reducing the project's size or interrogating cost-effective alternatives elsewhere. Other typical examples in Table 73 confirm these effects—and potential opportunities.

Table 73 Key Factor Framing

Category	Representative Quote	Frame treatment
Regulation	'it was statutory constraints as starting point, then working up from there…'	Statutory regulations treated as starting points or thresholds
	'...the cost of compliance' (legally forced), 'versus the cost of going beyond' (loss of profit).	Legislation treated as targets or ceilings
Cost	'…compensate high tender costs with reductions in low-hanging fruit, like cutting back on sustainability to minimums'.	High costs treated as targets for sustainability cut-backs
	'Contractors offering cost savings are undoing design decisions and reducing sustainability measures'.	Sustainability treated as targets for cost-savings
Risk through talk	'If the first thing you do is try to ram anything down somebody's throat, …you're in danger of alienating them within seconds, and you're never going to get a good response.'	Communication risk as forcefulness alienating favourable responses
	'a lot of our clients are on a big learning curve, struggling to keep up with some of the legislation changes, I'll go along and say 'do you realise you need to comply with X…' their first question to me will be 'well do I have to?… what's wrong with the last one we did'.'	Communication risk as experience-based compliance learning curve
Risk through design	'there is always a base system in the house that you can rely on... it's getting the purchasers trust of what you are doing it for. So if you go too experimental then I think the general feeling is you'll alienate a market from being interested in buying that house…'	Reliability and maintenance as trust-vs-experimentation for marketability
	'In healthcare, they don't want to buy into something, you know on those scales of things, if you get it wrong it's a massive upheaval and cost, etc. …we don't want to have an ongoing building issue…'	Reliability and maintenance risk as right-vs-wrong upheaval and cost

4.4.1.11 Reflection on typical influences

This study-part described a more structured exploration of typical influences across all exploratory interviews. It usefully identified that many influences were

related to values and frames, whereby numerous influences could be substantively studied with a composite lens of values-and-frames which reflects their interrelationship and captures their joint effects in decision contexts. Values-and-frames influences can impact the space available for individually-meaningful, contextualised choices about sustainability. Typical influences are now better understood, where several important factors emerged and several others confirmed, as outlined in Tables 74-75.

Table 74 Key confirmatory factors in Study ES3a

#	CONFIRMATORY FACTORS	DESCRIPTION
1	Stakeholders	Reconfirmed that clients were key decision-making stakeholders from architect's perspectives.
2	Prescriptive inputs	Many stakeholder's inputs were prescriptive, they delimited space for meaningful choice beyond statutory compliance.
3	Choice-space remaining	The evidence clearly showed that the only space remaining and potentially accessible is the interaction between client and architect.
4	Values and frames' roles	Influences involving regulations, cost, and risk led to confirming the roles of frames with values in discussions as both perpetuating and curtailing spaces for meaningful choice.
5	Framing constrains meaningful choice-space	The act of language treatment in discussions—as framing—is itself a constraint on meaning and meaningful choice, where many influences are likely linked to this phenomenon.

Table 75 Key emergent factors in Study ES3a

#	Emergent Factor	Description and treatment
14	**Choice boundaries are inherent in the roles stakeholders play**	Many stakeholders' influences—including architects—created unacknowledged boundaries to the 'space' available for individually-meaningful, contextualised choices about sustainability which were inherent in their roles, e.g., as statutory authorities; clients; contractors. This requires problem-framers to calibrate their messages according to roles *and* values. As clients are key, the space for meaningful choice in architect-client discussions will be further examined in ES3b-ES3c below.
15	**AR framing creates implied boundaries**	Framing/Treatment of key factors set implied boundaries: Regulations and Costs; Examined next in ES3b-ES3c.
16	**Potential for meaningful choices through values-and-frames**	V+F=potential to make decisions more meaningfully; Values-based decisions are likely to be more meaningful; Meaningful choices could unlock and explain the influences of values and frames on decision-making and their role in meaningful choices about sustainability; Examined next in ES3.

However, aside from the recognition of e.g., cost or communication as influences, without context they reveal less about their source or effects on spaces for meaningful choice, because therein opportunities may be made for establishing

sustainability more meaningfully through decision-making. Subsequent parts of ES3 and later systematic studies will examine the influences' effects on not only what is said and how, i.e., framed, but also frames' effects on decision-maker's choices, in context, tracking the effects over time—to determine their impact on spaces for meaningful choice and any potential room for improvement. Thus, the next study-parts develop then apply a means to identify and track influences and challenges in the discussions where sustainability is decided, to see what spaces for meaningful choices exist and how created or constrained, then where any opportunities might exist for improvements.

4.4.2 MA3 Revised mapping techniques

Gaps identified in Study ES2 highlighted the need to develop the mapping technique to identify and track values-and-frames influences as sequences through a project. The values-and-frames were mapped, Table 79, as they evolved in an exemplar case representative of the six exploratory cases. It is a rich summary communicating the values details, the frame details, and importantly allows their changes along the chronology of different discussions to be followed. The particular ways to conceptualise values, frames, and the way that they interact with each other, all had to be co-developed in a kind of 'ecology': the process was difficult and fraught with challenges. Many different concepts from a range of other fields were considered, and those that were ultimately used are outlined here and detailed in Appendix-4.3. The mapping method alone is an important output of this research.

4.4.2.1 The most useful values and frames concepts

The architect-client discussions as retold for all projects were collected and analysed with the values-and-frames approach developed across them. The final values-and-frames process maps, portrayed in Table 79, incorporate findings relevant to understand meaningful choice with a values-and-frames lens in both

ES3b and ES3c. The foundations for those maps first required identifying both values and frames concepts. The preparatory WeValue InSitu elicitation of shared values of architect groups produced bespoke values statements (Table 78) as useful indications of what to look for later in datasets. Thus, sample summaries of interview-coded client values, as interpreted and communicated by participants while retelling discussions, is given in Table 76, interview-coded architect values in Table 77 and sample coded frames in Table 72 (above).

Table 76 Typical Client's Values V_{CL} (Group-G2)

Typical Values, in order of frequency
1. Cost-effectiveness
2. Delivering Value-For-Money
3. Feasibility (realism)
4. Financial Viability (and Fundability)
5. Saving Money
6. Fulfilling needs
7. Profit, Return, Turnover, Profitability, and similar variations
8. Statutory Compliance (threat of loss)
9. Tradition/Traditionalism
10. Energy Efficiency
11. Benefits of Sustainability (usually to themselves),
12. Marketability of Sustainability (also Reputation)
13. Sustainability, but only if convenient or easy.

Table 77 Typical Architect's Values V_{ar} (Group-G2)

Typical Values, in order of frequency
1. Client Satisfaction,
2. Sustainability,
3. Good Design,
4. Good Communication,
5. Responsibility,
6. Working with Likeminded People/ Being Liked/Likable,
7. Honesty,
8. Leadership,
9. Practicality/Pragmatism,
10. Intellectual Stimulation/Opportunity.

Table 78 Examples of participant's statements of shared values, resulting from the WeValue process

Value Theme	Value Indicator / Statement
Typical	
Responsibility, Commitment, and Trust (G2); Commitments, Integrity, Trust (G3)	Team members (implicitly) trust each other to meet their commitments, without the need for formal agreements.
	It is important that people's behaviour it consistent with their words and actions to develop trust.
Opportunities for improvement (G2); Development & learning (G3)	People have different opportunities to learn and achieve through critical reflection, creativity, originality and open dialogue.
	It is important that we promote and encourage personal development and learning.
Holistic Relationships, Collaboration, Open communication	People treat each other with kindness.
	It is important that communication is transparent and open; People are able to suspend their own standpoints during dialogue and listen to those of others.

(Continued below)

Table 78 (Cont). Examples of participant's statements of shared values

Value Theme	Value Indicator / Statement
Atypical	
Change for Better (G2)	People can create [in ways that are] deeply meaningful, with significant impact for the benefit of the wider community of life.
	People have a sense of power that they can affect change.
Social sustainability (G3)	Decision-making processes are ethical, e.g., guided by justice, fairness, transparency, compassion, trust, and moderation.
	People tailor the message they need to get across according to the specific human being(s) sitting in front of them.
Financial and Intellectual remuneration (G3)	It is important that we feel that we have been paid a commensurate fee for the work we have done.
	It is important that we have satisfaction in a job well done.
Risk Management (G3)	It is important to try to minimise mistakes and manage risk appropriately [fear of failure].

4.4.2.2 Principal map findings

Some of the interim designs trialled with multiple cases (see Appendix-4.3) show preliminary values-and-frames concepts and schematics developed then discarded. However, the 'conversational' data could not be described in these ways. The final values-and-frames process map is portrayed in Table 79, which incorporates the principal findings in Table 80 below.

Table 79 (below) Final, exemplar framing experience map example, Trial 11 of 11 (MA3/ES3): Serially linked columns of primary discussion exchanges with Values and Frames in key phases.

With what was learned from the preliminary work, architect AR08 and client CL4 values and frames were discretised and sequenced to map their construction project from project inception to final agreed sustainability measures. The map, typical of the six cases from Group-G2, shows main discussion content sequences, with Units-of-Analysis by column as: architect values instantiations in context and problem-frames; then client values instantiations and prioritisation by number, and consequent client decision frames. Serializing each Unit-of-Analysis shows the sequential impact of values-and-frames on the evolution of decision-making over time. It is read by column, top-to-bottom then left-to-right. Each column represents one, key discussion or conversation sequence concerning sustainability, by project phase, with acting values and frames. The top row shows architects' (and other speakers') values, followed by their interrelated problem-frames. The middle rows are clients' values, with the complete list first, followed by their contextual instantiations, numerically prioritized by weight the client afforded in each conversation, corresponding to their decisions. The last row shows clients' decision frames, also by project stages coded from transcripts.

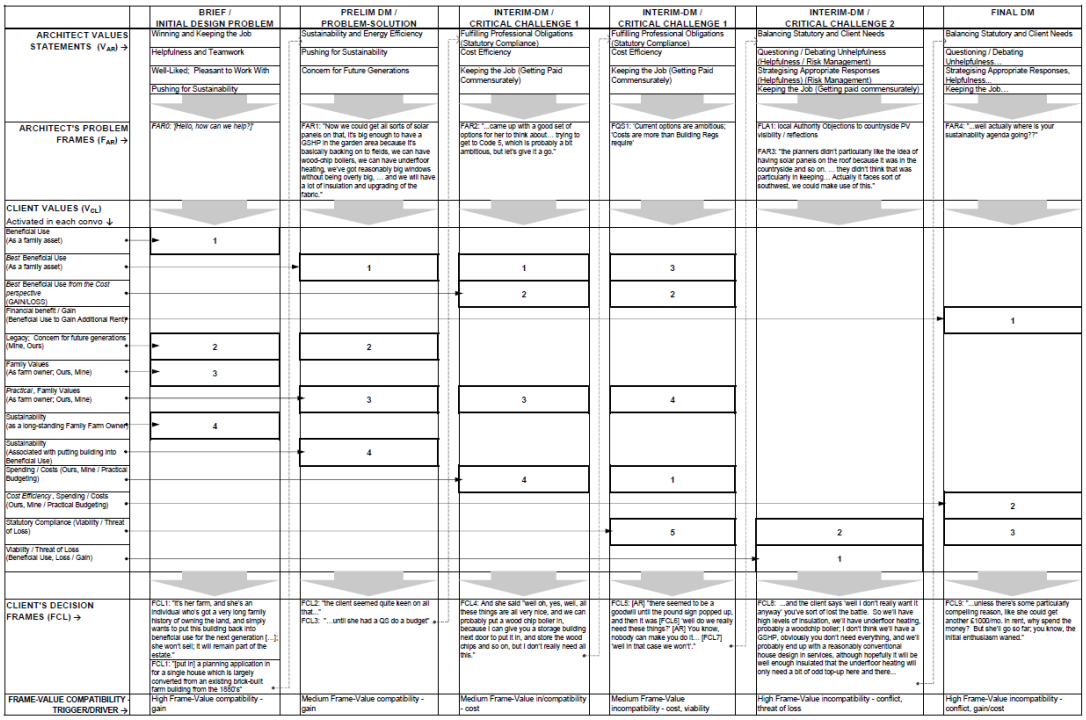

BRIEF / INITIAL DESIGN PROBLEM
PRELIM DM / PROBLEM-SOLUTION
INTERIM-DM / CRITICAL CHALLENGE 1
INTERIM-DM / CRITICAL CHALLENGE 1
INTERIM-DM / CRITICAL CHALLENGE 2
FINAL DM
ARCHITECT VALUES STATEMENTS (VAR) →
Winning and Keeping the Job
Helpfulness and Teamwork
Well-Liked; Pleasant to Work With
Pushing for Sustainability
Sustainability and Energy Efficiency
Pushing for Sustainability
Concern for Future Generations
Fulfilling Professional Obligations (Statutory Compliance)
Cost Efficiency
Keeping the Job (Getting Paid Commensurately)
Fulfilling Professional Obligations (Statutory Compliance)
Cost Efficiency
Keeping the Job (Getting Paid Commensurately)
Balancing Statutory and Client Needs
Questioning / Debating Unhelpfulness (Helpfulness / Risk Management)
Strategising Appropriate Responses (Helpfulness) (Risk Management)
Keeping the Job (Getting paid commensurately)
Balancing Statutory and Client Needs
Questioning / Debating Unhelpfulness.....
Strategising Appropriate Responses, Helpfulness...
Keeping the Job...
ARCHITECT'S PROBLEM FRAMES (FAR) →
FAR0: "[Hello, how can we help?]"
FAR1: "Now we could get all sorts of solar panels on that, it's big enough to have a GSHP in the garden area because it's basically backing on to fields, we can have wood-chip boilers, we can have underfloor heating, we've got reasonably big windows without being overly big, ... and we will have a lot of insulation and upgrading of the fabric."
FAR2: "...came up with a good set of options for her to think about... trying to get to Code 5, which is probably a bit ambitious, but let's give it a go."
FQS1: 'Current options are ambitious; 'Costs are more than Building Regs require'
FLA1: local Authority Objections to countryside PV visibility / reflections
FAR3: "the planners didn't particularly like the idea of having solar panels on the roof because it was in the countryside and so on. ... they didn't think that was particularly in keeping... Actually it faces sort of southwest, we could make use of this."
FAR4: "...well actually where is your sustainability agenda going?!"
CLIENT VALUES (VCL) Activated in each convo ↓
Beneficial Use (As a family asset)
Best Beneficial Use (As a family asset)
Best Beneficial Use from the Cost perspective (GAIN/LOSS)
Financial benefit / Gain (Beneficial Use to Gain Additional Rent)
Legacy; Concern for future generations (Mine, Ours)
Family Values (As farm owner; Ours, Mine)
Practical, Family Values (As farm owner; Ours, Mine)
Sustainability (as a long-standing Family Farm Owner)
Sustainability (Associated with putting building into Beneficial Use)
Spending / Costs (Ours, Mine / Practical Budgeting)
Cost Efficiency , Spending / Costs (Ours, Mine / Practical Budgeting)
Statutory Compliance (Viability / Threat of Loss)
Viability / Threat of Loss (Beneficial Use, Loss / Gain)
1
2
3
4
1
2
3
4
1
2
3
4
1
2
3
4
5
1
2
3
1
CLIENT'S DECISION FRAMES (FCL) →
FCL1: "It's her farm, and she's an individual who's got a very long family history of owning the land, and simply wants to put this building back into beneficial use for the next generation [...]; she won't sell; it will remain part of the estate."
FCL1: "[put in] a planning application in for a single house which is largely converted from an existing brick-built farm building from the 1950's"
FCL2: "the client seemed quite keen on all that..."
FCL3: "...until she had a QS do a budget"
FCL4: And she said "well oh, yes, well, all these things are all very nice, and we can probably put a wood chip boiler in, because I can give you a storage building next door to put it in, and store the wood chips and so on, but I don't really need all this."
FCL5: [AR] "there seemed to be a goodwill until the pound sign popped up, and then it was [FCL6] 'well do we really need these things?' [AR] You know, nobody can make you do it... [FCL7] 'well in that case we won't'."
FCL8: ...and the client says 'well I don't really want it anyway' you've sort of lost the battle. So we'll have high levels of insulation, we'll have underfloor heating, probably a woodchip boiler, I don't think we'll have a GSHP, obviously you don't need everything, and we'll probably end up with a reasonably conventional house design in services, although hopefully it will be well enough insulated that the underfloor heating will only need a bit of odd top-up here and there...
FCL9: "...unless there's some particularly compelling reason, like she could get another £1000/mo. in rent, why spend the money? But she'll go so far; you know, the initial enthusiasm waned."
FRAME-VALUE COMPATIBILITY - TRIGGER/DRIVER →
High Frame-Value compatibility - gain
Medium Frame-Value compatibility - gain
Medium Frame-Value in/compatibility - cost
Medium Frame-Value incompatibility - cost, viability
High Frame-Value incompatibility - conflict, threat of loss
High Frame-Value incompatibility - conflict, gain/cost

Table 80 Principal findings incorporated in the values-and-frames process map

#	Category	Principal map findings
1	Frames	The frames that people brought individually to each discussion changed over time—influenced by the previous discussion.
2	Discussion frames	The 'discussion purpose', e.g., concerning problem-setting or problem-solving, dominated the framing of the discussions (with respect to the research question)—the frames brought and used in communication individually by the client, or the architect, were incorporated in these.
3	Values characteristics	The important (actively dominant, highly prioritised) values of the client shifted emphasis and changed in priority along the series of discussions.
4	Values manifestation	Both the architects' and clients' *values systems* (as the group of all individual's values regardless of context or type, e.g., instrumental, terminal, self-enhancing, self-transcending) seemed to remain relatively stable across the series of discussions, but values' manifestation//instantiation and priority and thus influence on frames did change.
5	Visualising influences and shifts	The maps respond to a need to help visualise and communicate not only the chronology/sequencing of frames and values in discussions, but also shifts in priorities, and how they overlap and influence each other. These phenomena are further examined in Part ES3b, §4.4.3.1-4.4.3.2 below.
6	Discussion purposes	Along the series of discussions, their functional purposes were found to be usefully characterised as: decision formations, decision shifts, and decision changes. These phenomena are further examined in Part ES3c, §4.4.4 below.

In brief, Values-and-Frames interactions were most impactful when deciding about sustainability at three key junctures of architect-client discussions, and therefore represent the greatest opportunity for meaningful choices. First, during briefing, when the client initially communicated their preliminary design problem, to which the architect responded with some ideas including sustainability options, then the client decided whether to proceed with those options. This interaction was where values first manifested through frames, and then decisions were formed. The second impactful interaction was when the initial decision began to shift. The third was when framing significant challenges changed earlier decisions. Because of their significance, these are explored in ES3b-ES3c below.

4.4.3 ES3b Spaces for meaningful choice: Values-and-frames in decision-making discussions

To better understand spaces for meaningful choice, this study-part developed and applied the means to systematically identify and map precise sequences of relations between values and frames and their effects over time in decision-making discussions about sustainability. Because participants recounted discussions

taken in turn between one or multiple speakers, neither mapping studies MA1-MA2 (e.g., Figure 32-33) could adequately account for emergent findings that discussions thus happened in sequences of individual frames, rather than cycles of negotiating a common frame. Nor could it account for how values created pathways of influence via frames, from problem-framer to decision-maker to problem-framer and so on—thus an unaccounted anomaly from those studies and a potential inaccuracy of the Figure 33 map.

To reconcile these conflicting accounts, the current study-part used an exemplar case generated with Group-G2 data and examined it with a new lens of meaningful choice from the perspective of values-and-frames sequencing over time. Thus, this part was iteratively developed in constant comparison between data-findings-discussion-memos of all six cases from Group-2, then compared with above-mentioned existing knowledge. Because no methods existed to analyse and map, then compare the content, relations, and process in one project, start-to-finish, with multiple units-of-analysis between at least two parties' $[Frames] \Leftrightarrow (Values) \Leftrightarrow [\![Decisions/Choices]\!]$, several methods were trialled in MA3 (§4.4.2). With the final mapping method, it was possible to demonstrate the 'pathways' of influence (§4.4.3.1), space(s) for meaningful choice (§4.4.3.2)—as found in the data. Knowing this, any room for improvement, characterised as opportunities for individually-meaningful choices about sustainability is examined in ES3c(§4.4.4).

4.4.3.1 Values influence pathways mapped via frames

The revised case-map (e.g., Table 79 & Appendix-4.3) shows which architect's values (V_{AR}) influenced their problem-frames communicated to clients [F_{AR}], which in turn de/activated client values (V_{CL}) that then influence their choice or decision-frames $[F_{CL}]^{DM}$ (later simplified as [F_{CL}]), which the architect considers as an instruction to act. Each columnar sequence represents a Unit-of-Analysis. Linked sequences, shown by dashed arrows linking previous [F_{CL}] to later,

contextually-responsive instantiations of (V_{AR}), terminate in the client's final framed decisions [F_{CL9}], comprised of linked contributions from multiple parties but focused on the interaction between architect and client. Together, these can be usefully described as values influence pathways which importantly show how values-and-frames interactions: can create spaces and boundaries for meaningful choice, contribute to meaningful decisions, and shift decisions within already-bounded choice-spaces, explained below.

Variables and precise sequencing

The preliminary work showed that the principal factors—values and frames (V), [F]—each had two sub-categories regarding their origins and purpose. For [F], the architect's problem-frames [PF_{AR}], simplified as [F_{AR}], where an issue was selected and proposed (naturally implying architect's choices) on which the client decided; and the client's decision-frames [DF_{CL}, or F_{CL}] communicated their choices and rationales. Both the architect's values (V_{AR}), and client's values (V_{CL}) were clearly identified. These were coded from interviews and tabulated then mapped. For instance, from the exemplar interview quote below, the value (V_{CL}) coded was Beneficial Use (next generation family benefit) and Legacy; Concern for Future Generations (mine, ours). The architect's evaluation, "fabulous" suggests a synergy after perceiving value compatibility.

> *"…it's her farm, and she's an individual who's got a very long family history of owning the land, and she simply wants to put this [dilapidated] building back into beneficial use for the next generation, which is fabulous... she won't sell; it will remain part of the estate" (AR08:178-179).*

Using this method and nomenclature, the sequencing of architect and client values and frames was achieved by comparing their natural and logical orders. They were naturally communicated as frames that externalise information and communicate values [$F(V)$], but logical sequencing suggests that frames

communicate values which speakers 'bring to' or are instantiated in the discussions (plus other contextually-selected information), therefore

$$(V) \rightarrow [F].$$

Characterising values influence pathways

With this nomenclature and sequencing, the final map demonstrated how, based on architects reports, values (V_{AR}, V_{CL}) were contextually instantiated, resulting from subjective response to contextually and subjectively framed decision-problems [F_{AR}] and decision-frames [F_{CL}], resulting in final agreed decisions as communicated to architects by clients. [F_{AR}] can be interpreted by the client as either compatible or incompatible with (V_{CL}) based on the desired outcomes in relation to their contextually instantiated and/or recalibrated values (V_{CL}) in response to [F_{AR}]. Contextually responsive frames recalibrated values instantiation and ordering/priority. Frames were adjusted later when values were challenged or in conflict during Critical Challenges, CC1-CC2 Table 79. Preliminary framed decisions were recalibrated or overturned when $[F_{AR/QS}]$ of challenges or conflict subjectively 'speak to' or activate contextually higher-priority (V_{CL}). Clients' final decisions [F_{CL9}] were made with (V_{CL}) revealed through Critical Challenges framing, which are considered their 'core decision-making values'.

Importantly, in these frames were found not just raw information, but frame components—Problem Definition (e.g., meeting sustainability 'targets' or 'thresholds'), Causal Interpretation (energy inefficiency is against regulations), Treatment Recommendation (to mitigate, use energy-efficient components, thick insulation, etc.), and Evaluation (these are cheap and effective therefore worthwhile). Together these frame components had the capacity for values de/activation. If frames conveyed meaning imbued in 'raw' information, and values constituted what was most individually meaningful; then, simply, $[F] \approx meaning$ (frames convey meaning) and $(V) = meaningfulness$ (values represent

internally significant meaning). Speaker's frames were found activating/deactivating listeners values by communicating issues and information with varying meaningfulness or significance to listeners, which then motivated their action as communicated in their decision-frames, or

SEQ2: [Problem_Frames$_{speaker}$] → (Values$_{listener}$) → [Decision_Frames$_{listener}$].

This can be considered as 'values-framing'—or framing to values. It suggests that the principal factors and relationships are what architects said about sustainability [F_{AR}^{SD}], how that affected clients' values through clients' interpretation of how contextually worthwhile and meaningful sustainability was to them, and the clients' resulting framed choices/decisions about actions that impact sustainability [$F_{CL}^{SD}]^{DM}$ (simplified as [F_{CL}]) .

A relational mechanism as influence best explains the depicted relationship sequences. Influence is defined herein as a cognitive factor that tends to shape, regulate, or have an effect on actions. These inter/relations are interpreted as signs of influence, which were identified in language as relational operators between two entities, including 'subjectively respond', 'instantiate', 'recalibrate', 'motivate', 'affect', 'interpret', 'resonates with', and 'de/activate', followed by an effect. The entities, as discussion content, and influencing factors were found first, then the influence's effect as a move, change, reaction, decision, or outcome.

Influence sequencing

In architect-client discussions, pathways of values influence via the frames used and interpreted were first detected and construed. values influenced the formulation of a speaker's frames:

$$(V_s) \rightarrow [F_s]$$

Then, by communicating information that was variously meaningful to listeners—including communicating speaker's own values and 'playing back' listener's

values—speakers' frames influenced listeners by communicating to their values:

$$[F_S] \rightarrow (V_L)$$

Through listeners' interpretations of values-compatibility in the context of those values' instances, the listener would decide or choose one course of action versus another:

$$(V_L) \rightarrow [F_L],$$

rendered as $(V_S) \rightarrow [F_S] \rightarrow (V_L)$ and combined with previous sequences, this led to finally mapping the complete sequences as:

$$\text{SEQ2a: } (\text{VALUES}_{AR}) \rightarrow [\text{FRAMES}_{AR}] \rightarrow (\text{VALUES}_{CL}) \rightarrow [\text{FRAMES}_{CL}] \cdots$$

shown serially by column in the worked example, Table 79. Together this demonstrates the underpinning principles of framing from and to values; their effects on decisions are further examined in ES3c.

4.4.3.2 Space for meaningful choice

Looking for Values-and-Frames interactions led to finding not only values influence pathways—as the influences of values on and via frames of decision-problems/options and decisions—but also key underpinning factors affecting meaningful choice.

Understanding meaningful choices through values and frames interactions

To understand the relationship of framing to meaningful choice in these sequences, examples from the preliminary work on sustainability frames helped understand important mechanisms. It was noted that, like the enthusiastic framing example, when speaking about sustainability e.g., regulations to clients, the ways architects characterised and treated regulations in discussions was different from other captured information by emphasis, sign (pos/neg/neut.), weight (i.e., significance, strength) and meaning (by implication). Their framing as 'aiming for regulatory targets' or 'starting with statutory thresholds' expresses real variation in meaning and carries different weight. The former implies a ceiling and that regulations are

difficult to achieve, whilst the latter implies a beginning or starting-point. The latter also suggests that speakers choose to seek and frame higher levels despite the difficulties they may already know but have not framed. This is significant to not only individual decisions, but more importantly how any attempts higher than statutory minimums are addressed by architects and handled by decision-makers—because framing, as the act of language treatment in discussions, is itself a constraint on meaningful choice. By imbuing 'raw' information—e.g., regulation—with one meaning versus another or different meaning not already present, a speaker constrains the space available for listeners to establish their own meaning. This therefore suggests that framing can constrain meaningfulness.

It was also noted that framing the regulations concerning sustainability issues was correlated with architects own values and type of architectural practice: goals/ceilings from predominantly commercial-focused; and backstops/thresholds from design-focused or sustainability-focused. Framing by commercially-focused architects naturally reflects the values they bring to their commercially-focused practice. Therefore, it is highly likely that values drive the meaning communicated by frames.

Moreover, if regulations already represent lower boundaries for meaningful choice and their framing as 'targets' are constraints on meaningful choice beyond statutory minimums, then space for individually meaningful choices about sustainability is effectively eliminated. Therefore, how sustainability-related issues like regulation are framed thus imposes boundaries on meaningful choice and sustainability outcomes.

Frames-to-Values compatibility contributes to meaningful choice

To find better common ground on which a more informed approach to meaningful decisions can be made, the efficacy of frames became crystal clear in the context of their relationship with values and effects on meaningful choice. If frames

communicate meaning in ways that were varyingly compatible with listeners' values, and framed and interpreted meaning de/motivated listeners to choose/act, frames' compatibility with values thereby establishes meaningfulness and creates or delimits space for meaningful choice with high likelihood. Frames-to-Values compatibility is detectable by the extent to which communicated information was considered worthwhile, important, and meaningful between interlocutors. This was evidenced first, by client's reactions/responses, such as "the client seemed quite keen on all that…", and "the message warming within them"; or "push-back" and "do we really need all this". Second, Frames-to-Values compatibility was evidenced by re/action via decision for or against. Frame compatibility with values garnered favourable responses, as anticipated. Unexpectedly, frame compatibility with previously-dormant or stronger values garnered revised, negative responses.

These findings suggest that values influence, 1) how people framed sustainability issues—based on the values they bring or manifest in context, and 2) how people interpreted sustainability frames—based on values de/activation by the framed decision-problems they interpret. Frames communicated one's values thus communicated to others when seen with enough context to show an evaluative component or interpretation alongside problem-treatment, but also implied via phraseology and emphasis. Frames set the scope, boundaries, and focus within which, and means by which, people's values concerning sustainability were conceptualised, operationalised, or 'materialised', thus affecting the space for and outcomes of meaningful choice. Values interoperated with frames in sequences which were both natural and logical, but their content was context-specific.

Thus, to understand values influence pathways, two mechanisms of influence were systematically identified as 1: $(V \rightarrow F)$, 2: $(F \rightarrow V)$, $\cdots$, values influence one's frames, and frames influence another's values, in sequence. To contextualise these two individual pathways, their repeated detection then revealed their sequencing as SEQ2b, which demonstrated sequential relational influences.

$$\text{SEQ2b: } \underbrace{(V_{Speaker}) \rightarrow [F_{Speaker}]}_{1} \rightarrow \underbrace{(V_{Decisionmaker}) \rightarrow [F_{Decisionmaker}]}_{1} \cdots$$

$$\underbrace{\qquad\qquad\qquad\qquad}_{2}$$

Spaces for meaningful choice

Taken together, it was therefore concluded that spaces for meaningful choice were found at each decision-oriented interaction where frames met values. The most impactful were located, a) at project start (i.e., during briefing and initial problem-solution development, e.g., ES2a-ES2b) when major broad-reaching decisions are made, and b) periods of critical challenge (i.e., later when problems arise and are framed with varying values-compatibility; see ES2c) when earlier decisions begin to vary. In the first six cases, these challenges were typically associated with cost, conflict, risk, loss, and compounded complexity, and contextually-interpreted as critical because of their perceived impact to the client's goals associated with their values. Framing such challenges altered the decision-making landscape by constraining meaningful choice-space thus resulting in reductions to previously-agreed sustainability, with subsequent dissatisfaction.

From the evidence, this interaction process can be interpreted as linearly-connected clusters of decision-making events, normally dual-party and frequently involving inputs from multiple sources. Architects naturally focused on architect-client interactions, but also included client-contractor, architect-consultant, architect-Local Authority, etc. Whilst there may also be client-consultant and client-Authority discussions, no data was found as evidence. So too with multi-

party decision-making as 'groupthink' (AR03), but it could be possible. Having described and briefly explained the principal findings, detailed rationale behind the principal sequences and key supporting findings are included in Appendix 4.

Choice communication in decision-making

By looking at decision-making as a communication process with a joint 'values-and-frames' lens, opportunities became clear for more values-conscious framing, thereby providing space for meaningful choice. By conceptualising project decision-making as a single, broadly-scoped, project-long discussion process, each architect-client discussion was viewed with a framing-lens, then examined with a values-lens, having elicited values first. This way, in the context of decision-making, spaces for meaningful choices were found in each interaction: when architects were listening for values, and considering sustainability's potential meaning in values terms. Making spaces for client's meaningful choice thus involved framing to, then choosing based on, values. Reflection-in-action provides further opportunity to reframe accordingly.

Consequently, more effective interactions centred around the architect detecting client values and framing sustainability to be compatible or resonate with those values. When later project challenges arose, those framed either incompatibly with prior-instantiated values or compatibly with more strongly-held core values served to overturn previous decisions for decreased project sustainability. Interestingly, the interviewed architects already seemed to be working with values and frames—some were linking sustainability to client's/stakeholder's existing values via contextual re/framing, albeit inexplicitly or unknowingly. This means it should be straightforward to integrate the findings into their existing workflows.

4.4.3.3 Reflection on meaningful choices, values-and-frames

This study-part on analysing an exemplar, project-long decision-making 'discussion' for influence sequences towards meaningful choices was a critically important step in understanding values influences via frames. This part has established key underpinning patterns suggesting principles of values-and-frames relationships affecting 'meaningful choices' as critical manifestations of decisions more likely to endure because of frames-to-values connections via compatibility of sustainability's values-based meaningfulness. Values influence pathways via frames can then create or constrain the space available for meaningful choice through architects' framing sustainability's meaning as varyingly compatible with decision-makers' values.

Architect-client and architect-stakeholder framing more closely resembled turns-at-talk (Schegloff, 2007), a self-explanatory and more linear feature of interpersonal discussions. Two individuals would construct their realities in two separate minds, thus potentially forming similar but not identical frames-of-mind. An individual's frames would be constructed from their interpretations of discussion participant's contributions made through turns-at-talk on a 'linear' timeline, and share features intersubjectively, but not identically. This therefore also resolves the anomaly identified in ES2 and MA1-MA2 that jointly-held frames suggest jointly identical frames-of-mind and frames-of-communication.

Six Key Emergent Factors from this study-part are summarised in Table 81. As previously introduced, it would be useful to take this learning forward and investigate more opportunity to provide space for meaningful choice with a composite values-and-frames lens incorporating values influence pathways via frames as projects unfold to shed light on their effects.

Table 81 Key emergent factors from Study-part ES3b

#	Emergent factor	Description and treatment
17	Composite values-and-frames lens	A useful, composite values-and-frames lens emerged from this study-part, combining a values lens with a framing lens; henceforth taken forward.
18	AR+CL values compatibility	Architect-client values compatibility presents an opportunity for architects to better understand their clients because of their potentially jointly compatible values; further examined in SS2a/§5.3.2.
19	Frames-to-Values compatibility; Values-compatible frames	Framing communicates meaning in ways that may be varyingly compatible with the listeners values, then one of these characterisations may motivate or de-motivate listeners to choose/act, for it is well-established that human values are important pre-cursors as motivators of decision-making behaviour; further examined in SS2a-SS2b/§5.3.2-5.3.3.
20	Values-framing	'Values-framing' as *re/framing to values*: creating frames that resonate with, connect to, reflect, or respond to values; and *Framing from values* as values-driven framing; framing to values can also be called values-based framing; further examined in ES3c below and SS2ba-SS2c/§5.3.3-5.3.4.
21	Key underpinning patterns suggest principles of values-and-frames relationships	Key underpinning patterns suggest the potential existence of *principles of values-and-frames relationships* concerning meaningful choice; further examined in SS2/§5.3.
22	Opportunities for meaningful-choice-space	Opportunities for meaningful choice emerged as potentially being created and constrained by values-and-frames sequential influences; studied next in ES3c.

4.4.4 ES3c Opportunities for meaningful choice: Values influence pathways via frames

Having identified 'space' for meaningful choice, this study-part examines the decision variations resulting from values-and-frames interactions, to see where any opportunity exists or may be possible to actively facilitate more space for meaningful choice. This part uses the exemplar case to demonstrate the main patterns found in six commercial cases on the evolution of architect-client discussion series through principal stages whereby their purposes are usefully described as decision formation, shifts, and changes.

4.4.4.1 Decision formation

The important first discussion illustrated in Figure 34 and Table 79 (Columns 1-3) indicates newly-found tangible and intangible contents of frames and their effects. In the first segment, the client (she/her) framed her initial design problem (Figure 34, statement labelled [FCL1]) to the architect (he/him). The client's tangible, 'physical' design problem is clear from the first part; the second part showed her more intangible, values-based rationale for seeking a solution, which communicated their values. The architect's interpretation of this design problem showed four client values (with qualifiers indicating their focus): Beneficial Use (next generation family benefit); Legacy and Concern for Future Generations (mine, ours); Family Values (as farm owner; ours, mine); Sustainability (as a long-standing family farm owner). Together this shows that the client's initial design problem frame [FCL1] also communicated her values which motivated (i.e., influenced) the initial design problem she framed.

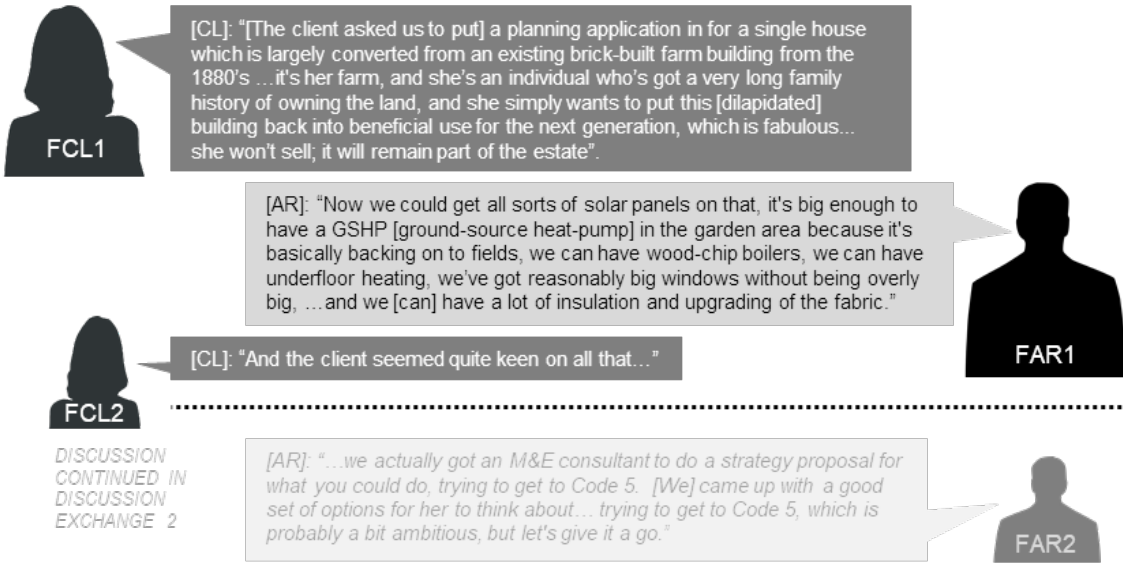


Figure 34 First discussion between architect AR13 and client CL4
(based on participant's narratives of discussions with their clients)

Frames communicating values is significant here for two reasons. It signals that a) client values were being contextually instantiated in discussion through their chosen design problem-frames, and b) those values were being interpreted by the

architect, which plays forward in their discussions and later/final decisions about sustainability. Client values motivating, or influencing, their design problem-frames is significant both analytically and practically for two reasons. It indicates that c) those values underpin subsequent decision-making by providing initial reference-point anchor against which potential solutions would be evaluated—by client and architect if attentive; and d) when detected, client values provide opportunities for architects to reframe sustainability to reflect or respond to those values, thereby making sustainability more individually and contextually meaningful. This happened next. The underpinning principles were captured more precisely in simplified notation form as a sequence, or $(V_{CL})\rightarrow[F_{CL}]$, to represent how client values influence their frames, whereby frames can communicate values.

Next, on hearing the design problem and those values, the architect then enthusiastically framed sustainability with Goal/Benefit Frames in terms of reduced running costs and energy use (statement labelled [FAR1], Figure 34). The architect's evaluation, "fabulous", suggests a synergy after interpreting the compatibility of the client's values, which manifested by activating similar values. This then informed how he/architect first framed sustainability. More specifically, having interpreted from her/client's, design problem frame at least some interest in sustainability—and similar values of Concern for Future Generations, Family Values, and Sustainability—the architect then enthusiastically framed sustainability with Goal/Benefit Frames "in terms of the running costs, the energy use, and all the rest of it" using contextually-relevant solutions [FAR1]. This action indicates that his interpretation of her frames [FCL1] as communicating (similar) values also activated his values, which together motivated his choice of framed solutions; underpinning sequence notation $[F_{CL}]\rightarrow(V_{AR})\rightarrow[F_{AR}]$. Client frames activated (i.e., influenced) architect values by the underpinning 'mechanism' of frames compatibly communicating to values.

By speaking enthusiastically of multiple forms of energy efficiency measures and renewables without directly communicating his evaluation [FAR1], the architect was also indirectly or implicitly expressing his own values through his emphasis and phraseology. Here, his values of 'Promoting Sustainability', and 'Energy Efficiency' precipitated (i.e., influenced) his enthusiastic framing of multiple energy efficiency measures, or $(V_{AR})\rightarrow[F_{AR}]$. This therefore reinforces that values influence frames for both architect and client—significant for two reasons. First, beyond the obvious 'physical' design problem, what was important to his framing was the client values he interpreted in context, alongside any interconnection with his own values manifesting in context. Second, the architects' framed decision options were likely chosen—or calibrated—to effect favourable decisions by 'working' with the client values he interpreted. These underpinning relationships show the first Underpinning Key Factor in establishing sustainability's meaningfulness: by framing options to 'work' with and/or reflect client values. A negative response or unfavourable decision would suggest an ineffective frames+values combination, because sustainability's meaningfulness was not sufficiently expressed, i.e. framed, to 'work' for the client with those values.

Then, in eliciting the client's initial favourable decision ([FCL2] Figure 34), those patterns remained noticeable. Responding to the architects' framed solutions, the client's keenness indicates that the architect got it right. The client valued the forms of sustainability framed by the architect's solutions (e.g., lower running costs and energy use) because they would fulfil goals associated with her values. The goals as framed in her design-problem-frame—beneficial use of a dilapidated outbuilding for future generations—expressed both tangible and intangible valued facets [FCL1] which the architect interpreted and translated into his frames of sustainability choice options [FAR1]. This shows the second and most important Underpinning Key Factor: decision-problem-frames influence decisions by communicating design solutions that are compatible with decision-maker's values interpreted as both 'tangibles' and 'intangibles', sequenced as $[F_{AR}]\rightarrow(V_{CL})\rightarrow[F_{CL}]$.

Together, this demonstrates how the framed solutions and client values were compatible, the solutions were therefore meaningful to her, and she decided favourably. Most importantly, sustainability frames-to-values compatibility facilitates sustainability's meaningfulness which influences decisions. The client's decision-frames mirrored and thus communicated her 'decision-making' values, which validated the architect's values interpretations, thereby confirming his consideration that the client valued sustainability and would find his framed options meaningful. Because decision-frames communicate contextually-verifiable values, they are useful for architect's subsequent reflections and values-framing/reframing when detected.

Sequencing or conjoining those underpinning principles together thus shows how Attribute and Goal/Benefit Frames influenced this client making a meaningful choice about energy efficiency and renewable energy measures—through frames-to-values compatibility. Together this shows how client values were first established, then options framed to satisfy or fulfil them when the architect came to understand and respond to those initial values, indicating implicit values recognition and 'playback'—or 'values-framing'. The choice options as framed were meaningful because they would fulfil her design problem by connecting with and satisfying the tangible and intangible aspects of her values (e.g., Beneficial Use, Sustainability, Concern for Future Generations). How the client reacted and replied to that response then shows her associated choice was values-based and therefore meaningful.

The sequence serialised is important to understanding how later decision-problems were framed and decided. Because what mattered for the architect to progress the project was how he interpreted the client's moves and decisions as framed, on which he based his consequent actions and instructions to others—a subtle but crucial point easily overlooked. Interpreting client instructions

communicated as decision-frames and values is significant, because the meaningfulness of sustainability solutions can be interpreted by clients from the architects' frames through client values acting as filters influencing/motivating her decisions. Together this strongly suggests that what matters between two speakers in decision/choice contexts is not the presence of all four frame components, but what listeners interpret that then forms the basis of their response, decision, or action. Having previously considered that frames had evaluative components that expressed the speaker's values, expectations were revised thus looking also for listener-decisionmaker interpretations and response-actions.

Thus, when choice-option-frames connect with values, they are more meaningful. When associated choices are made in response to those frames, a frames-to-values connection is made, and decisions/choices can be attributed to being values-based. Together these accurately pinpoint four Underpinning Key Factors of meaningful choices influenced by values-and-frames interactions, summarised in Table 82 above. These factors are expanded as the research unfolds. Discussion content sequenced from this stage-setting architect-client interaction shows how and why values influence frames, which frames influence values and then decisions. These Key Factors thus sequence architect-client values-and-frames interactions; however, this only shows their functions in framing and making meaningful choices. To understand what happens over time, the sequence and underpinning factors are serialised to help explain the two remaining important architect-client interactions affecting sustainability: decision shifts and changes affecting the client's meaningful choice from a values-and-frames perspective.

Table 82 Four Underpinning Key Factors of meaningful choices influenced by values-and-frames interactions

Factor	Description
The role of values and of frames	Values can act as filters influencing/motivating decisions suggesting values form implied decision criteria, e.g., instrumentally or terminally. Values can influence their holder's frames, and values can be translated into frames.
	Frames can act as 'values transmitters': frames can have evaluative components that express the speaker's values. Frames can activate dormant values, suppress, deactivate, and/or reinforce active values. Re-prioritisation of both values and frames can occur with Lever Frames—Lever Frames can precipitate, trigger, or leverage a critical change to the decision landscape and outcomes by constraining the available space to establish sustainability more individually-meaningfully because frames emphasise one selected meaning and limits opportunity to establish other meanings which could connect with different values.
Relation	Values and frames' primary interrelation was *influence*: the influence of values on frames, and of frames on values; values influence on framing-as-act and frames-as-'artefact' or output can be mapped as pathways.
Interaction mechanism	Frames-to-values *compatibility* via individual *meaningfulness* related to values. Speakers' frames activated (i.e., influenced) listeners' values through the underpinning 'mechanism' of frames compatibly communicating to listeners' values with e.g., values-based language, intonation, timing, phraseology.
Sequencing	Ordering values and frames in serially repeating sequences from problem-framer to decision-maker over time thus describes decision formation, shift, and change through values' manifestation and action through problem-frames & decision frames
Summary	Altogether, one's values can impact and influence one's frames for communication, $(V_S) \rightarrow [F_S]$, demonstrating the pathway of speaker's values influences on their own frames. Speaker's frames can then influence listeners by activating or deactivating their values through meaningfully communicating information in varying degrees—i.e., values-based compatibility, thus encouraging or facilitating values activation or dormancy, $[F_S] \rightarrow (V_L)$. In sequence, this renders as $(V_S) \rightarrow [F_S] \rightarrow (V_L)$, as SEQ1. Therefore, this suggests that frames communicate one's values through problem-treatment and emphasis, made clear by an evaluative component, but also implied via phraseology and emphasis.

4.4.4.2 Decision shifts

The architect's earlier enthusiastic framing of multiple sustainability measures [FAR1] and subsequent 'ambitious' evaluation [FAR2] (Figure 35) triggered/influenced shifts in the client's values to '*Best* Beneficial Use' and '*Practical* Family Values' (shifts italicised) which precipitated/influenced their budget request [FCL3]. The shift is noted in client language focusing on practical applications to achieve her valued goals.

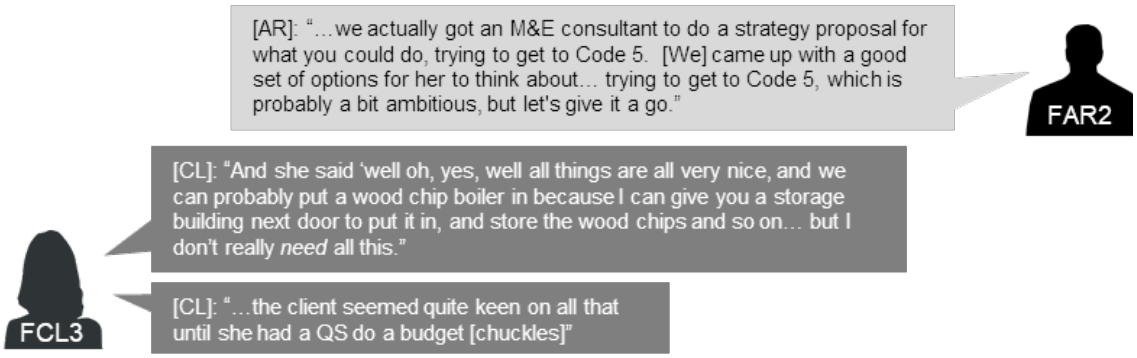


Figure 35 Second discussion between AR13 and CL4 (based on participant's narratives)

With the client's request framed as 'Budget', the architect interpreted it negatively as seeking low cost or looking for cheaper options. This activated/influenced his values of Fulfilling Professional Obligations, Cost-Efficiency, and Job-Retention, which then drove/influenced his less-than-supportive Attribute/Evaluation Frames of 'good options…' with 'probably a bit ambitious…' [FAR2]. These frames newly-activated client valuing Cost/Spending, driving/influencing her subsequent Needs-Satisfaction Decision-Frame [FCL3], expressing 'need' in relation to—or framed by—her newly-shifted values. This suggests the basis of meaning that both parties previously established and agreed was being eroded by less-supportive frames.

This exchange suggests that the architect's Attribute/Evaluation Frames [FAR2] triggered shifts in client values towards self-protection, resulting in sustainability reductions, indicating the client's cost-based loss/gain interpretation of sustainability frames' meaning. When this pattern continued, other sustainability reductions followed. With cost-related values already activated, the client seemed extra-focused on self-protecting loss/gain. The erosion to previously established meaning suggests that the client formed new meaning, based on other, previously dormant or deactivated values, and decided accordingly. With sustainability's meaningfulness eroded, any values related to sustainability became lower priority because newer Evaluation-Frames were then more meaningful to cost-related values. This means that new frames communicated meaning interpreted as more compatible with values variations, thus shifting values priorities related to

sustainability (Table 79, middle columns). Thus, frames eroded meaningfulness through values shifts thereby reshaping the client's frame, creating new Reference Points—and missed opportunities to reframe sustainability to newly-shifted values. The remaining sequences show how decisions changed.

4.4.4.3 Decision changes

Two final discussions (Figure 36-37 and Table 79 end columns) show how the earlier values shift thus focused the client first towards spending and cost-related decisions, then need-based risk perceptions which motivated final decisions. They demonstrate the interactions of new Reference-Point-Frames and shifted values hierarchies on final, changed decisions.

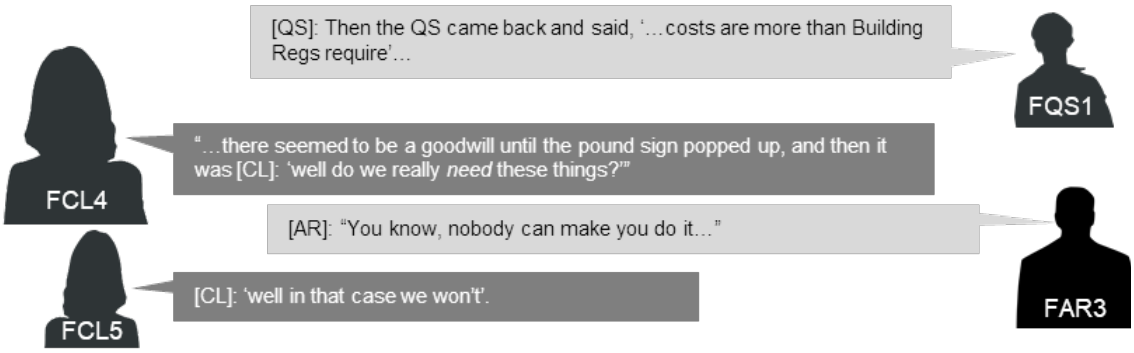


Figure 36 Third discussion between AR13 and CL4 (based on participant's retold narratives)

First, the Quantity Surveyor/Estimator (QS) suggesting the costs for sustainability measures beyond Building Regulations were unnecessary [FQS1] (Figure 36) is a Reference-Point-Frame re-anchoring at 'cost necessity', thus casting current costs in opposition. This framed challenge initially activated the client's valuing Statutory-Compliance, precipitating her Decision-Reinforcement-Frame of 'need' responding to the reference point anchor [FCL4].

This frame then reinforced the architects' previously activated values from [FAR2], influencing his own Reference-Point-Anchoring and Retrenchment-Frame [FAR3]. Importantly, that frame then reinforced the client's Cost/Spending and Statutory-

Compliance values, thereby influencing her first changed decision [FCL5]. With new Reference-Point-Frames anchoring new cost-based meaning, it newly activated cost-related values to motivate decision changes which reflected those values. Importantly, meaningful choice about sustainability eroded in favour of meaningful choices about costs and statutory compliance. Maintaining sustainability's meaningfulness in this context required reframing either reasons to retain it, or new options to replace it, in terms of cost and/or compliance.

In the final two-part discussion (Figure 37), the Local Authority lodged an objection during the architect's Planning/Zoning negotiations. Having previously retrenched with the client, this significant or 'critical challenge' newly activated the architect's values of Balancing-Statutory-and Client-Needs; Questioning/Debating-Unhelpfulness; Strategising-Appropriate-Responses (likely primed earlier) to influence his own Reference-Point-Anchoring and defensive justification with a pragmatic, Attribute-Frame [FAR4]. However, by interpreting the architects' frames in terms of loss/gain and potential project viability threat, the client's response [FCL6] indicated her values priorities changed to Statutory-Compliance (in terms of Beneficial Use, Loss/Gain) and Project-Viability/Beneficial Use (in terms of Threat-of-Loss) thereby deactivating most other values, evident in her response [FCL6]. This suggests that meaningfulness is interpreted relative to currently active values by priority, and that meaningful choices are made contextually with respect to active values hierarchies responding to frames.

Finally, the architect emotively posed a 'critical challenge' Reference-Point-Frame about sustainability agenda capitulation relative to previous agreements [FAR5]. The client responded with her financial gain Decision-Frame [FCL7], showing she interpreted that emotion/affect and frame-value incompatibility. This revealed that her highest-priority values of Financial-Benefit/Gain underpinned her newly-emerged, high-priority valued goal of Beneficial-Use to Gain-Additional-Rent. Together this finding reinforces that meaningfulness is interpreted relative to

contextually instantiated values in priority order. Maintaining sustainability's meaningfulness here—thus maximising opportunity (to create space) for meaningful choice—required reframing sustainability's cost and/or compliance in terms of risk and/or viability, thus challenging.

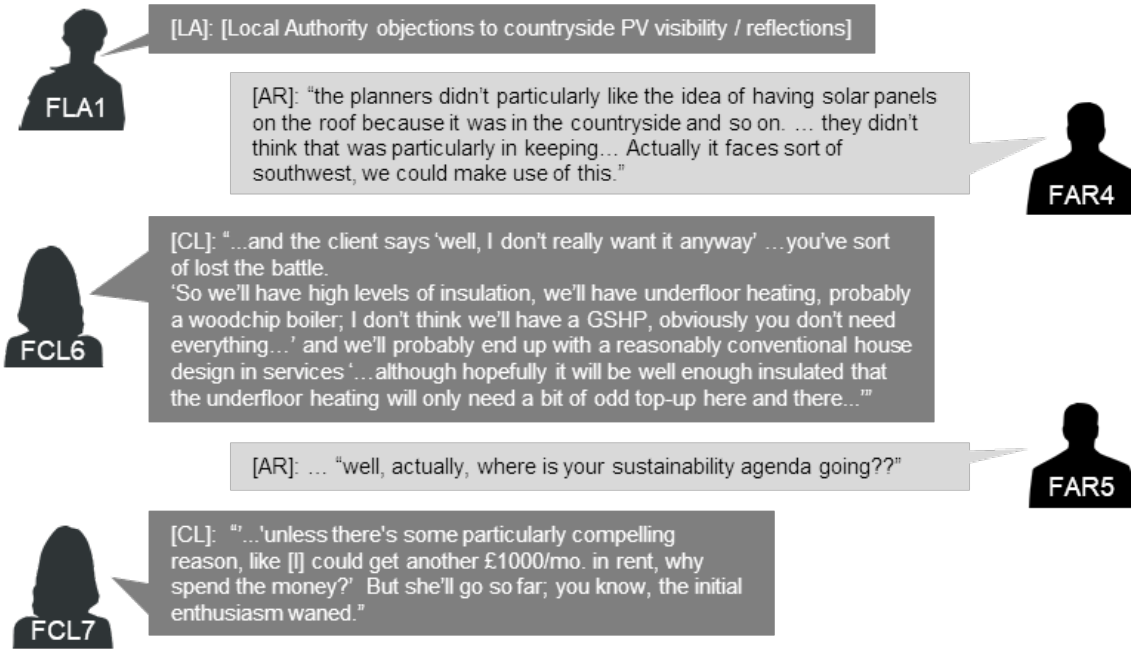


Figure 37 Fourth discussion between AR13 and CL4 (based on participant's retold narratives)

4.4.4.4 Patterns across decision variations

These interactions show three things about how decisions shifted and changed through a values-and-frames lens on meaningful choice. First, the architect identified tacit values shifts (mainly towards cost/spending and financial benefit/gain) [FCL3-4], and also modifications [FCL4, FCL7] as response to his challenge-frames. This showed that the values of the client were reprioritised in the challenge-frames of cost, viability, conflict, and threat of loss/gain—missed opportunities to meaningfully reframe sustainability. Second, values instantiation patterns suggest that earlier, aspirational, values associated with family and sustainability (generally self-transcending) were later suppressed by 'core' values associated with financial benefit/gain-loss (generally self-interested). Architects were often not prepared for such shifts, sometimes responding (almost in

frustration) with less motivation, potentially from divergences in compatibility with their own values—and missed opportunities. Third, this suggests overall that, i) the client's 'meaningfulness boundaries' were less clear than both parties initially considered, and ii) together they were co-discovering boundaries—and the fit in them for sustainability. For instance, in the exemplar case the architect initially framed potential options in terms of running costs, energy use [FAR1], and code achievement/compliance [FAR2]. But with increasing challenges, these became better-defined as financial benefit from the building, then sustainability—thus a lower priority—with new/missed opportunity to reframe sustainability's meaningfulness in terms of financial benefit.

4.4.4.5 Reflection on values influence pathways via frames

By using a composite values-and-frames lens, this study-part showed and tracked evidence of values influence pathways via frames through decision formation, shift, change, where frames-to-values links via compatibility both constrained and created opportunity to make more and better-quality space for client's meaningful choice in the four ways shown in Table 83.

Table 83 Four opportunities to create space for client's meaningful choices in a project lifespan

Op#	Opportunities
Op1	Each time problem-framing happened, because a problem-framing interaction can constitute a *meaningful-choice-space*.
Op2	Throughout project decision-making as a temporally-extended process comprised of *sequential, interlinked* meaningful-choice-spaces.
Op3	Through (harnessing) values-and-frames interactions whereby values' influences can form pathways via frames in sequences that repeat serially.
Op4	By discovering and working with interpersonal boundaries to meaningful-choice-spaces through framing *and reframing* based on values-and-frames interactions manifesting as frames' effects on values.

In all these commercial cases, decisions began shifting and later changed; these effects happened in sequences and can be attributed to consequences of frames-to-values compatibility. It is conceivable that in other cases, decisions could be changed without first shifting, e.g., when frames are incompatible with values in

context, but there was no evidence here. Later research stages would be able to identify this with new cases in §5.3.

Knowing this, practitioners can make use of their communication skills through values-listening and values-framing, knowing that decision landscapes shift and therein modify the available choice-space because of frames effects on values. Thus, detailed evidence was demonstrated of key, fundamental underpinning factors from these careful exemplar studies, providing process-level principles of values-and-frames interactions. These principles can apply to architects both making and missing opportunities to help clients by creating space for them to make more individually-meaningful choices. New emergent factors are outlined in Table 84.

Table 84 Key emergent factors from Study-part ES3c

#	Emergent factor	Description and treatment
23	Key underpinning factors comprise transferrable principles; process-level findings	Four Key underpinning factors of values and frames roles, interrelations, interaction mechanism, and sequencing; Emerged whilst looking for OpMCh; to describe the architect-client interaction process comprising 1) values and frames which provide, facilitate, and deliver the discussion content, where 2) values natural influence pathways form via frames in sustainability decision-making over time; further examined in SS2.
24	Decision formation, shift, and change	Loss or gain of opportunities for meaningful choices (OpMCh) manifested in decision formation, shift, and change; as found above.
25	Creating opportunities for meaningful-choice-space	More opportunities for meaningful-choice-space may be created by better connections between values and frames; examined next in SS1 & SS2.

Knowing that these key underpinning factors comprise potentially transferrable principles and constitute process-level findings, they can now be used to understand frame effects on decisions via values in other cases. To develop these findings, a systematic study SS1 would next be conducted of all the discussions from six Group-G2 cases, which can provide professionals with useful examples of effective frame options for a range of clients based on values-and-frames effects. Through such frame options, more opportunities (to create space) for meaningful choice might be made by better connections of values-and-frames.

4.5 Exploratory studies: Reflection and implications

The linked study-parts of two exploratory research phases provide an understanding of human values' influence on the dynamics of interpersonal, decision-making interactions affecting building sustainably via decision problem-frames and decision communication frames. A working method was demonstrated to analyse spaces for meaningful choices in architect-client discussions. Of the possible ways to understand meaningful choice, it was shown how conceptualising project decision-making as a temporally-extended communication process and studying it with a composite values-and-frames lens thereby unlocked framing as both an important locus and mechanism where opportunities to create space for meaningful choice are made and spent.

Embarking to explore decision-focused interactions between architects and key stakeholders, it was through the preliminary work that the interactions with most stakeholders were identified as relevant inputs in architect-client decision-making affecting sustainability. But because many stakeholder's inputs were prescriptive, they delimited space for meaningful choice beyond statutory compliance. The only real space remaining was the client-architect interaction. By first eliciting lists of values then frames from architects, these studies successfully demonstrated how to locate and track values and their influences through frames in participant's richly-described discussions with clients and stakeholders. In tracking the natural pathways of values influences through a typical discussion via problem and decision-frames, the dynamics of those various human values were traced along multiple discussions to the context-specific output of framed sustainability decisions. With this, the studies showed that meaningfulness in discussions was enhanced by the framing of decision-problems and associated choice options to be more compatible with client values, and vice versa.

It was shown that by framing with values-based meaning, space can be provided for more meaningful considerations about project sustainability and measures which then contribute to longer-term impacts. Opportunities for meaningful choice were found at each architect-client interaction where frames concerning sustainability met values with varying compatibility through values-and-frames joint characteristic of meaningfulness. The most impactful were at project start and periods of challenge, associated here with cost, conflict, risk, loss/gain and complexity. The evidence showed framing these as critical challenges resulted in reductions to previously agreed sustainability, despite initial willingness. Seeing this process as co-constructed meaning-making, the studies demonstrated that human values currently influence final outcomes toward or against sustainability through the meaning communicated in architects' frames and their effects on clients, as evidenced by decision-frames reflecting values.

Thus, the exploratory studies successfully demonstrated a novel method to map and analyse values influence pathways through discussions, and identified that values influenced meaningful choice through the frames communicating sustainability's individual meaningfulness via decision-problems, choice options, and decisions. These findings mean that meaningful choices concerning sustainability were those aligned or compatible with values, regardless of whether those values were readily apparent. Knowing this, the main message for architects is for them to subjectively link decision-makers' values with longer-term sustainability outcomes, in contextually enduring ways through subjectively-responsive re/framing of sustainability issues.

Whilst initial frame analyses captured all four frame components, ES3/§4.4 showed that it was primarily the Problem and Evaluation components that influenced decisions because Causes/Causal Interpretations and Treatment Recommendations were frequently implied by the evaluative component when

seen with enough discussion context, and aspects of problem-definitions were frequently implied by contextual factors such as project types, stages, or works-packages. Similarly, decision-frames may not always explicitly communicate all four frame elements, but were frequently implicit in the decision context and decision-problem on which they were deciding and implied by the evaluative components of decision-frames. This approach can now be applied more widely in Systematic Studies SS1-SS2 (§5) to focus on examining values influences on and via frames as key moments of influence in multiple new cases with architects taking other architectural approaches. These exploratory findings are later integrated and triangulated with literature in Chapter 6 with the systematic findings.

Chapter 5 Findings: Systematic Studies

5.1 Chapter introduction

The purpose of this chapter is to report the main findings in Phase-4 (Figure 2) from two Systematic Studies of values-and-frames influences in decision-making affecting sustainability, signpost supplementary material, then reflect on the findings, which are interpreted and triangulated to existing literature in Chapter 6. As the second of two chapters of primary data studies, it follows directly in response to the learning gained from the exploratory studies and their emergent phenomena.

The underpinning aim of this thesis was refined towards impacting project sustainability outcomes from architectural practice through communication and decision-making. Therefore, the aim from Study ES3 was refined in two Systematic Studies, SS1-SS2, with participant groups G2-G3 respectively (Figure 3), to focus on findings and applications that would be useful in practice. Two synthesising guiding questions were formed to understand the effects of values-and-frames in decision processes, with associated aims for the systematic studies in Table 85.

Table 85 SS1-SS2 Guiding questions and purposes

Category	#	Element
GUIDING QUESTIONS	Q1	What are the interactions and effects of values-and-frames together on decisions affecting sustainability?
	Q2	How can values-and-frames be leveraged together as a composite concept in decision processes by interested parties to make and capitalise on opportunities to improve longer-term sustainability outcomes through more individually-meaningful choices?
PURPOSES	A1	To understand how the interactions between values-and-frames support or suppress sustainability improvements.
	A2	To focus on findings and applications that would be useful in practice
	A3	To identify and record any emergent factors for further analysis.

The findings can be viewed from multiple angles with different lenses to show new perspectives on values-and-frames relations and effects. Therefore, the first Systematic Study SS1, examines frame effects on decisions via values, but with a unique lens. The study is organised by frames' favourability to clients by type, thus providing 'frame options' as more immediately useful information for practitioners about creating or constraining space for meaningful choice.

The three-part Systematic Study SS2 with Group-G3 was designed to focus specifically on 'values influence pathways' via frames on decisions by examining three key portions of the previous equation, SEQ2b, which is actually about the natural pathways values take to influence framing and decision-making. In SS2a, an important part of the equation, marked **A**, was examined in detail: how architects ascertained the values of their clients in decision-making interactions. To establish the validity and reliability of architects' interpretations of their clients' values, the study-part examined how architects grasped, interpreted, and represented client values across numerous real-world examples. Study-part SS2b then examined one key part **B**, the principles of frames connecting with values, or $[\mathrm{F_{AR}}] \rightarrow (\mathrm{V_{CL}}) \rightarrow [\mathrm{F_{CL}}]$ in SEQ2b.

$$SEQ2b: \underbrace{[\![(V_{Speaker}) \rightarrow \overbrace{[F_{Speaker}]]\!] \rightarrow [\![(V_{Decisionmaker})}^{\mathbf{A}} \rightarrow [F_{Decisionmaker}\ ]]\!]}^{\mathbf{B}} \hookleftarrow \cdots}_{\mathbf{C}}$$

Patterns were previously detected in how participants typically conducted or 'approached' not only projects and clients by types, but also framing sustainability. The final study-part SS2c synthesises the learnings from earlier studies with a design towards broader impacts with findings and applications also useful in practice but at a broader-scoped analysis level incorporating participant's strategies. Findings from ES1 identified framing practices as one of three core practices within sustainability decision-making processes (§4.2.2.1, Table-49). Framing practices as 'framing approaches' again emerged from new data to show how participants strategised framing and its' effects, potentially also accounting for their past experiences, as suggested by **C** in SEQ2b. This is capstoned by a summarising reflection on the two systematic studies, §5.4. Thus, Chapter 5 is organised in two main parts, illustrated in Figure 3.

5.2 **Study SS1**: First Systematic Study: Useful frame options from frame effects on decisions via values

From the Exploratory Studies reflection, gaps highlighted the need to better understand frame effects on decisions via values in a wider range of discussions, and to focus on findings and applications that would be useful in practice when seen through the lens of 'frame effects' on decisions via values. Therefore, using those methods, this first systematic study (SS1) concentrated on one specific aspect: patterns of useful 'Frame Options' for architectural practitioners to use with their clients to facilitate favourable decisions, with the guiding questions and main purpose in Table 86.

Table 86 SS1 Guiding questions and purposes

Category	#	Element
GUIDING QUESTIONS	Q1	How do architects frame sustainability to their clients—i.e., what do architects say to their clients about sustainability—that affects their decisions based on the values expressed contextually in terms of decisions that are favourable or unfavourable to project sustainability?
	Q2	Which frames can be employed in future as useful 'frame options' based on the patterns identified for Q1?
	Q3	How does this affect meaningful choices concerning sustainability?
PURPOSE	P1	To identify ways of framing communicating sustainability that influence favourable decisions towards improved project sustainability.
	P2	To describe their impacts on meaningful choices.
	P3	To identify and record any emergent factors for further examination.

The purpose was to know which frames were more effective for facilitating favourable decisions across a range of values-themes and client-project types. Then, in practice when architects spot certain values in discussions, these findings could help them adjust the 'whats, hows, and whys' of framing sustainability options knowing they had favourable effects for similar values-themes and clients by type. Unfavourable effects would help practitioners avoid framing less-effective frames-values pairings. This would also show the effects of participants' frames on clients' decisions via values and thereby how opportunities (to create space) for meaningful choice were made and spent over time and across various projects, or

$[F_{AR}]\rightarrow(V_{CL})\rightarrow[F_{CL}]$. Interesting patterns may reveal new ways to improve project sustainability outcomes through harnessing frame effects for more individually meaningful choice.

Data from six participants in Group-2 comprise six architect-client cases and 34 units-of-analysis. Client (and architect) values manifested contextually, so by identifying patterns of Values-Themes before and after both problem-frames and decisions, patterns of Frame Options were identified influencing values which motivated client decisions. The most useful way to show architects' interpretations of which frames worked with clients' values is by values-themes, effect-types, and client-types respectively. Frame Options are discussed in two ways for each values-theme. First, typical frame effects are shown with Exemplar Quotes to understand what each frame-type means in real terms. Second, specific favourable/unfavourable effects are shown for each client-type with worked examples. Brief guidance is provided on using these findings.

5.2.1 Favourable frame options with Responsibility values

Framing sustainability to clients with values associated with Responsibility garnered the most support and elicited decisions typically Favourable to sustainability. Architects reported that most clients expressed some form of Responsibility values, conveyed in seven types (Table 87). Hence, options for effectively framing sustainability were numerous because of Responsibility-type values' prevalence across client-types. Examples provide interested parties with Frame Options to help motivate more favourable decisions.

Table 87 Client Values Themes: Responsibility-type values

Client Type	Values Themes for Responsibility	Analysis Units	Analysis elements
Universal	Conformity, Statutory Compliance; Compliance, Accountability (e.g., Supply-Chain, Customers, Community, etc.)	8	32
Community	Community Responsibility; Cooperation; Progress; Sustainability;	12	48
Community	Responsibility for Human Welfare	2	8
Community	Fiscal Responsibility (to the community)	7	28
Community + Private Resi	Moral/Ethical Responsibility for Sustainability	9	36
Private Resi	Family Legacy / Family Responsibility	4	16
Private Resi	Long-term commitment / Family Responsibility	5	20
	Totals:	47	188

The Residential client's 'Responsibility' values were typically expressed as Family and Moral Responsibility; whereas Community clients as Human Welfare and Community Responsibility. Commercial clients' responsibility values were expressed as Supply-Chain Reporting and Statutory Responsibility. Frame options' frequent success or favourability was most likely linked to the nature of Responsibility as an outward-facing, socially-orientated value, and contingent upon project phase and contextually-relevant values found clustered together. Whilst other values played some role in client's decision-making, Responsibility (or Profit/Gain/Benefit, §5.2.3-5.2.4) was the highest-priority, 'core value' architects interpreted in these client's values clusters as underpinning their favourable decision-making. Decision quality as Favourable/Unfavourable is examined alongside its' content for potentially broader applicability because it provides indicators for frames-to-values connections. To provide a 'conceptual scaffolding' for which frames worked with values, Frame Options for Responsibility values that elicited Favourable decisions are examined first. Then, frame options with Unfavourable decisions are similarly examined.

5.2.1.1 Typical frame options Favourable with Responsibility values

Favourable frame effects were most frequent with client's values (V_{CL}) categorised as Responsibility, identified across five of six cases, expressed by all Client-Types. For each Client-Type, Favourable Frame Types (FT) demonstrate effective Frame

Options by working with client's values to elicit decisions favouring sustainability. Four Frame Types were effective as Frame Options because they typically elicited Favourable decisions by linking sustainability compatibly with Responsibility values (FTA1-4, Column-B, Table 88) with client- and context-specific characterisations by framing sustainability's relevance, rationale, and/or value (i.e., importance, meaningfulness, worthiness). Exemplar Quotes provided for each Frame Type show good examples of participant's stated expressions or phraseology.

Architect's initial probing for client's interest (FTA1), framed in terms of general 'outlook' towards sustainability or 'interest in the idea of sustainability', elicited decisions supporting sustainability (except for Commercial clients, examined below). Framing sustainability in terms of its Benefits to the client, fulfilling Regulations, and Statutory Requirements were all effective (FTA2-4). More specifically, Sustainability Benefits (FTA2) were typically framed as energy efficiency and longer-term cost savings for clients, including free energy, income from feed-in-tariffs, lower maintenance costs and frequency, lower fuel bills, better insulation, community benefits, etc. Consequently, clients with Responsibility values typically responded favourably to these frames because they recognised that i) the framed choice options would fulfil their valued goals[1] and needs, and ii) deciding favourably e.g., about energy efficiency was 'being responsible', evident from their decision frames. (Some specific frame options in later sections may overlap with these typical options).

[1] To clarify, this argues that one's 'valued goals' can be *satisfied*, whereas one's values guide one's behaviour e.g., like railways or pathways which can be taken (but not satisfied) towards a valued goal as an end state or destination (versus an unvalued goal), in the sense that values can be guides, ideals, goals, or states. This allows that valued goals *as values*, i.e., values-as-goals, can be reached via pathways that are not valued, and vice versa, values-as-paths can lead to unvaluable goals.

Table 88 Favourable Frame Types/Options, Responsibility values

For these Client-Proj. Types	[FT] These Types of Frames triggered favourable Decisions	Exemplar Quotes of effective frames with Clients expressing Values themed as Responsibility
All	FTA1 Initial Probing: for interest in sustainability (incl. context-appropriate details)	[F_{AR}] ...we [did] find out what their kind of outlook on things is [like, what are your interests in sustainability as a company, and in a sustainable building?] Yeah, yeah… (Commercial clients).
		[F_{AR}] …how interested are you as a client in the idea of sustainability? How important to you is it? That your building can be recycled? How important is it that you really look at the true cost in terms of the embedded energy and the cost of the use of the building, i.e., insulation standards, maintenance, and all the rest—how important of a factor is it? (Residential client).
	FTA2 Sustainability/ Sustainable Design Benefits	[F_{AR}] That's what I start to do right from the first briefing meeting. 'One of the aspects of this building, whatever it is, is we need to make it as efficient as possible. The big benefit to you is the running costs in your use of the building.' (Residential clients).
		[F_{AR}] …as a sort of strategic overview […] I focused on heating, lighting and insulation as the main drivers of things; and then there are other things like you could [improve the visual appearance] and all this sort of thing (Community clients).
	FTA3 Renewables requirements at Planning	[F_{AR}] we asked them in that first meeting what their thoughts were about sustainability and [then] how we may achieve the renewables targets for planning (Resid.cl.).
		[F_{AR}] ...we were told [at planning that] we had to do a site-wide 15% renewables, [with 15%] of the energy used by the site created by renewables (Commercial cl.).
	FTA4 Building regulations requirements	[F_{AR}] …u-values, for instance, it may have been 0.6 [W/m^{2}K] when that building was built, whereas we need 0.35 [for Building Regs approval]. It doesn't sound like much of a difference, but as I said you can't equate 0.25 with the impact that actually has in real terms on what you've got to do to achieve it (Community cl.).
		[F_{AR}] …it'll me*et al*l the minimum standards (Residential cl.).
Community only *(Continued below)*	FTC1 Concept: Sustainability strategy and options	Take that example in [place], those flats, that was for the church [...]. So you need to engage with the client. Yes, we knocked [through] the end of the [church], so in effect we were building a new building. I think it's [sustainability] introduced fairly early, almost at the first briefing session to be truthful, because it's something we need to find out and understand... They've got things that need addressing which will be of big help to them.
		[F_{AR}] Now it turns out that it was built in 1982 […] fairly recent, but surprisingly inefficient. There's very little in the way of insulation anywhere, the roof isn't much, it's got quite a few windows as single glazed [ok], there are the odd double-glazed ones, but not many. It's obviously open into a timber portal frame so it's open into the roof, it must leak like sieve; it's got fluorescent lighting behind big, deep pelmets around the perimeter. Now they illuminate the window beautifully (!) [laughs] but bugger all else and they are 6-foot long strips and they're just tubes – they're probably the most inefficient lights ever made in the history of man, sort of thing.
	FTC2 Details of sustainability strategy	[F_{AR}] I've done a report…as a sort of strategic overview […] I focused on heating, lighting and insulation as the main drivers of things; and then there are other things like you could [improve the appearance], all this sort of thing.
		[F_{MEC}] Well actually you don't need to cover it in solar panels, we need Xm^2. And then you could feed that into the flats and you could do all of their common parts' lighting, and then you could feed some of it into the church where you could do all of your hot water and probably most of your lighting as well.

(Continued below)

Table 88 (cont.) Favourable Frame Types/Options, Responsibility values

For these Client-Proj. Types	[FT] These Types of Frames triggered favourable Decisions	Exemplar Quotes of effective frames with Clients expressing Values themed as Responsibility
Community only *(Continued from above)*	FTC3 Constraints on sustainability options	[F_{AR}] ...I think that a building like that, an existing building, is in a way a bigger challenge than building a new one.
		[F_{AR}] But because of where it was, the fact that it was a Conservation Area, we couldn't go above a certain height. We couldn't go into the ground because of groundwater, we couldn't have the greywater recycling.
	FTC4 Compromises to sustainability strategy	[After the Council (parent body) highlighted a funding gap] [F_{AR}] You then have to start selecting what you can and can't do…
		[F_{AR}] …if you want to sell the flats [to help fund the community centre], they have to be a completely separate entity. So we don't want anything going through the party wall, because we have issues if it breaks down you've got to get to it, who pays for it…?
	FTC5 Conflict, Objection	[F_{AR}] No way the conservation officer is having [PV panels] sticking up off the top of the mansard…! English Heritage don't want them on the top of the mansard, the Victorian Society object…!
Residential only	FTR1 Concept: Sustainability options	[F_{AR}] Now we could g*et al*l sorts of solar panels on that, it's big enough to have a GSHP in the garden area because it's basically backing on to fields, we can have wood-chip boilers, we can have underfloor heating, we've got reasonably big windows without being overly big, …and we [can] have a lot of insulation and upgrading of the fabric.
		[F_{AR}] 'And would you like us to upgrade the insulation to the existing house and aim for high u-values for the extension?'
	FTR2 Design development options (incl. compromises and trade-offs)	[F_{AR}] …[we] came up with a good set of options for her to think about… trying to get to Code 5, which is probably a bit ambitious, but let's give it a go.
		[F_{AR}] I've had to sort of explain all the practicalities of the [Code 5] features they were asking for... 'Well, if you want to go to the ultimate water saving, you realise we are talking about a toilet with half the flush capacity than the one you've got at the moment. And you're going to be talking about showers that turn themselves off if you don't move. And you won't have a bath because it uses too much water.'
	FTR3 Renewables targets and standards	[F_{AR}] …we asked them in that first meeting what their thoughts were about sustainability and how we may achieve the renewables targets for planning.
Non-**C**ommercial	FNC1 Compromises to sustainability strategy	[$F_{AR\ /\ MEC}$] ...and then somebody [from M&E] pipes up, 'well, hang on a second, we then have to have the supplies from the church roof going into the flats to do their common parts, lighting and small power.' (Community cl.)
Commercial **O**ffices only	FTO1 Initial Probing: Industry Supply-Chain	[F_{AR}] Then we asked them 'where do you sit in the supply-chains of the [components] industry'.
	FTO2 Initial Probing: SD marketability	[F_{AR}] We looked at it [BREEAM] on [the office building] to get good/very good… in terms of the marketing.
KEY:	***SD**: Sustainability/Sustainable Design/Sustainable Development **FT**: Frame Type **BR**: Briefing Phase **CD**: Concept Design Phase*	

5.2.1.2 Community clients

Five Frame Types were effective options to motivate Favourable decisions when these Community clients expressed (to the participants) more social forms of Responsibility values, such as Fiscal Responsibility (i.e., to the community), and Responsibility for Human Welfare (FTC1-5, Table 88).

One effective, early option for both Community clients was to frame individually-localised variations of Sustainability Strategy, Options, and Details (FTC1-2) in contextually relevant and meaningful terms. For the Community Hall client, first, the architects framed the practical challenges of upgrading and extending their existing building by 'playing back' to them the sustainability issues they already knew were an operational issue for them. When focused around energy efficiency and visual appearance, early frames detailed sustainability in terms of client's concerns and needs. This reinforced their values 'brought' into the project as Operational Stability/Continuity; Community Responsibility (Benevolence/Accountability); and triggered Energy Efficiency/Sustainability; Sustainable Income; Responsibility to Maintain & Promote Assets. Client responses confirmed they recognised sustainability's benefits to them specifically. Then, framing Sustainability Strategy in terms of "heating, lighting, and insulation as the main drivers" alongside appearance improvements triggered values expressions of Fiscal Responsibility (Community Responsibility/Accountability); Responsibility to Maintain & Promote Assets (Community Accountability); earning their complete agreement.

Framing Sustainability Options and Details/Attributes (FTC1-2) worked as 'efficient windows, warm roof, warm walls as rendered/stuccoed external insulation', by reinforcing previous values. Framing renewable energy details worked with both Community clients, framed as 'strategy for applications and benefits of renewables' (FTC2), because details contextualised abstract concepts' meaning. These Frame Options reinforced values like Community

Benefits/Responsibility; and triggered Responsibility to Maintain/Enhance/Promote Assets. Decisions favouring sustainability were triggered because clients saw how architects' framed solutions would satisfy their valued goals.

Interestingly, framing numerous project difficulties and problems as Constraints on Sustainability Options (FTC3) to both Community clients positively narrowed the options and limited client choices. Examples of framing 'sustainability constraints' (again, as coded from transcripts) included: Conservation Area planning/zoning restrictions, or difficulties maintaining greywater recycling across multiple ownerships (legal constraints); challenges of sustaining existing buildings, or local groundwater table (physical constraints). These reinforced values like Responsibility to Maintain/Promote Assets; whilst triggering Funding/Income (Fiscal Responsibility/Accountability); with decisions remaining Favourable. Despite these difficulties, such frames focused these Community clients on the only remaining options whilst remaining 'on-message' (a term used by participants) by triggering or reinforcing 'core' values around Community Responsibility for Favourable decisions.

Constraints subsequently led to framing project problems and difficulties as Compromises to Sustainability Strategies (FTC4), which because of these client's values-based commitment elicited decisions continually favouring sustainability. The community clients were surprisingly resilient to funding issues (FTC4), or conflicts framed as Planning Officer disagreements (FTC4), when either were framed in the spirit of progress and compromise to achieve valued project goals. These 'on-message' examples meant clearly framing decision-problems in individually meaningful terms by relating the client's problem and possible solutions with their values/valued goals, thereby triggering Favourable decisions,

rather than 'off-message' or values-free language potentially triggering outright rejections.

5.2.1.3 Residential clients

Residential clients expressed forms of Responsibility values (to the participants) like Ethical Responsibility for Sustainability, and Family Responsibility. Effective frame options during concept design focused on contextually-meaningful applications of energy efficiency, fabric upgrades, and renewable energy framed positively and enthusiastically (FTR1, Table 88).

With the disused farm outbuilding client, Frame Options (FTR1) reinforced earlier-brought (V_{CL}) Beneficial Use and Family Legacy/Responsibility, garnering Favourable decisions because the decision-problems communicated sustainability's benefits as ways to fulfil Family Legacy and Responsibility. With the country house extension/refurbishment clients, initial frames Probed for Budget, then Interest in Sustainability as 'recycled buildings/materials, embedded energy, cost-in-use, insulation upgrades, and renewables targets. These activated client values: Attention to Detail; Respecting Nature/National Park setting, and Sustainability as 'ethically the right thing to do'. Both 'probing' frames garnered Favourable decisions plus client's own sustainability requests, including several recycled materials and solar panels. This showed clients recognised the framed solutions (budget/details; recycling/efficiency/renewables) satisfied their valued goals (environmental sustainability/family responsibility) and decided accordingly.

For both clients, Responsibility values remained active even with compromises to valued goals framed as lifestyle restrictions or planning objections (FTR2). Thus, these Frame Types elicited Favourable decisions by connecting with values. The examples showed effective frame options linking sustainability specifically to family-focused Responsibility values.

5.2.1.4 Commercial Office clients

With clients for a business park with commercial offices, framing sustainability by initially probing for client's sustainability interests through open-ended questions failed to elicit any values 'naturally' connected or responsive to sustainability. However, probing next asked directly about—and activated—their value, Responsibility for Supply-Chain Reporting 'downstream' to customers (FTO1-2, Table 88). Supply-Chain Reporting was valued as important and worthwhile in maintaining and winning business. Then framing sustainable design as a marketable asset was effective, eliciting decisions favouring sustainability when linked to those values. Probing clients first for valued issues and factors, then linking sustainability to those values, showed effective 'values-framing'. Effective frames elicited Responsibility for Supply-Chain Reporting, then sustainability was shaped 'to' those values when phrased and framed as compliance with their supply-chain reporting requirements.

Next, the architect utilised those contextual clues and cues about relevant values and their priorities—e.g., Supply-Chain Reporting—provided through client's responses as frames of important matters. This values information offered effective 'lines-of-argument' with which higher sustainability via BREEAM accreditation was linked to enduring client values, clustered as Marketing/Accountability alongside core values Competitiveness/Growth/Profit. This demonstrates the interplay and prioritisation of values within clusters being re/activated, reinforced, driving, or deactivated and overruled by other values of higher priority. Values reprioritised when clients contextually reacted or responded to architect's frames. Speakers 'leading' then 'following' with certain information and language contextually is relevant precisely because frames triggered beneficial 'values-effects' on decisions.

This important example demonstrates patterns more broadly found of how architects effectively linked sustainability with client values: by sequencing briefing questions and probing to reveal client values, then phrasing sustainability in terms of those values, thereby eliciting Favourable decisions. Thus, sustainability was reframed not as unrelated, distant, or unreachable goals; or nebulous existential threat to humanity; but in terms of context-specific issues that clients valued for their own reasons. Yet these action-effects remained either unrecognised or underappreciated. Knowing this, architects and project leaders can more knowingly probe for values and creatively shape sustainability's meaning in values terms using these examples.

5.2.2 Unfavourable frame options with Responsibility values

If the typical effects with clients expressing Responsibility values were Favourable decisions, then any frames tipping clients towards unfavourable decisions are significant and worth further examination. Although fewer Frame Types were ineffective, their effects on sustainability decisions were typically greater and more pronounced. Unfavourable frame options were related to choice-space constrainment from changes and problems as projects developed. This typically played out negatively across all client-types because some challenges were framed and interpreted as critical. A turning point or crisis was therefore created, calling for different values that newly motivated client decision-making unfavourably away from sustainability. Knowing this will help interested parties to identify potentially favourable framing options more quickly and predict potentially unfavourable responses as projects progress.

Table 89 Unfavourable Frame Types/Options, Responsibility Values

For these Client Types	[FT] These Types of Frames triggered *unfavourable* decisions	Exemplar Quotes of unfavourable frames with Clients expressing Values themed as Responsibility
Community only	FTC6 Funding: How funded?	[F_{LA}] ...the committee [went] to the Parish Council and said, 'we'd like to do these things', and the Parish Council said, 'that's wonderful; where are you going to get the money?' (i.e., not from us). [F_{AR}] You then have to start selecting what you can and can't do
	FTC7 Costs of SD Options	[F_{AR}] If you can make the hall even more attractive and maybe get some more income... But it's not going to be that simple, we've got to address the windows, the roof; but to do the roof properly you'd take all the tiles off and put a warm roof on. It could be done, you know, [it's just expensive] it may be external insulation rendered, but we've got to go for planning then because it's brick at the moment.
	FTC8 SD Legal Challenge	[F_{LAW}] The lawyers say that we've got a problem because if you want to sell the flats, they have to be a completely separate entity. So we don't want anything going through the party wall, because we have issues if it breaks down, you've got to get to it, who pays for it…?
	FTC9 SD Conflict, Impasse	[F_{AR}]...so there was a bit of an impasse between varying parts of the local authority and outside advisors, and we didn't have anything in there like that. That restricted the heating system we could have, and despite the fact that we should have been able to get at least one code level higher than we were, we couldn't rack up the points to a sufficient level.
	FTC10 SD Conflict, Compromise	[F_{AR}] every time you tried to do something somebody put an obstacle in the way. …what should've had happened is somebody should have taken the conservation officer on one side and said you are being ridiculously obstructive, there is no reason not to do this—it's a huge roof, its slate, these panels can be black/dark grey. 'Oh, no the historic character of the church will be adversely affected.' At the end of the day it's a load of bollocks. The church evolves, and the building evolves, and it will be the 21st century addition.
Residential only	FTR4 SD Planning Objections	[F_{AR}] the planners didn't particularly like the idea of having solar panels on the roof because it was in the countryside and so on. …they didn't think that was particularly in keeping… [But] actually it faces sort of southwest, we could make use of this [F_{AR}] the [National Park] Officer came 'round and objected to the south-facing PVs, which would 'create adverse visual impact in the countryside [in an authoritarian voice]'.
	FTR5 Resolving SD Planning Objection	[F_{AR}] What they didn't realise was that by capitulating at the first hurdle, we had to find alternative means to satisfy the renewables obligations that aren't going to cost a fortune… taking the PV's off the roof meant we either needed to put PVs in the garden or to use GSHP under the garden... ([F_{AR}] ...well actually, where is your sustainability agenda going?!
	FTR6 SD Cost Challenge	[F_{QS}] […the] current options *are* ambitious; [and the] costs are more than [what the] Building Regs require (sic). [F_{AR}] after the application was approved, the tender costs came back ridiculous—something between twice their original budget to almost quadruple, which was the highest!
Commercial **O**ffices only	FTO3 Excessive costs for BREEAM accreditation	[F_{AR}] [for] BREEAM on there, […] to get Good/Very Good, and the costs involved in the uplift to go beyond what the kind of basic Building Regs plus the energy savings that were put under planning, or the renewables in planning. But just to monitor it and go through the process was an extra £80-odd-thousand pounds without any capital outlay to, you know, 'put that up there' for the development as a whole.
KEY:	**SD**: Sustainability/Sustainable Design/Sustainable Development **FT**: Frame Type **BR**: Briefing Phase **CD**: Concept Design Phase	

5.2.2.1 Typical Frame Options unfavourable with Responsibility values

Three Frame Types were typically ineffective with Responsibility values. Frames of significant planning objections, prohibitive or excessive costs, and critical funding challenges all communicated project risks, eliciting unfavourable sustainability decisions (e.g., FTC6-7/FTR6, Table 89. Ineffective with earlier client values, these frames elicited previously-inactive values and consequently unfavourable decisions. One typically unfavourable effect concerned framing with negative or disparaging evaluations, to which clients with Responsibility values typically responded negatively. Interestingly, when sustainability was not mandatory or well-valued, these client's oppositions were weaker and their higher priority 'responsibilities for/towards others' dominated their decisions. This social/other nature of Responsibility suggests that clients were less likely to capitulate when challenged.

Five Frame Types typically elicited unfavourable decisions with Community clients (FTC6-10, Table 89); three with Residential (FTR4-6); and one with Commercial clients (FTO3). Not all unfavourable Frame Options were from architects; some were architects framing challenges raised by other parties, which were most likely filtered. With the scaffolding established above for frame effects on decisions via values, examples of how such interactions played out unfavourably in practice are discussed below.

5.2.2.2 Community clients

For Community clients, five primary Frame Types were ineffective options: funding and costs (FTC6-7, Table 89); and challenge, conflict, and compromise (FTC8-10); despite the first two having had previous positive effects.

For the Community Hall clients with Community Benefit values, frames of mid-project funding challenges triggered a contextual form of their core values to

caveat earlier Favourable decisions. Their Parent Council's funding deficit frames (FTC6/7) triggered values of Funding/Income driven by Fiscal Responsibility/Accountability as the client's 'final/core' decision-making values alongside Community Benefits. This led to instructions for cost-effective 'optioneering' and [F_{AR}] compromise needed to resolve nascent funding challenges. These frames refocused the client on thermal upgrades to reduce running costs, and visual appearance to increase income. This suppressed earlier values of Community Benefit; reinforced Funding/Income for Operational Stability/Continuity; and Fiscal Responsibility/Accountability as higher priority. With those values, the client consequently decided against pursuing high-efficiency sustainability options but in favour of straightforward/cost-effective thermal upgrades. The architect recounted, "they can only go as far as they can raise the money to do it". Despite these difficulties, initial frames had previously linked sustainability to these client's core values of Community Responsibility and Community Benefit. Importantly, whatever they eventually built began from decisions in favour of sustainability based on enduring core values.

With the Community/Church clients building apartments to fund their community centre, later-stage frames of serial challenges constrained the available choice-space by triggering their deeper, core values for seismic change. An issue concerning ownership separation and PV systems' maintenance was framed as a 'legal problem' (FTC8). These frames triggered values of Compromise for the Greater Good (driven by Ethical Responsibility) and reinforced Cooperation for Sustainability; Sustainable Estates/Property Management, triggered earlier. This met with beleaguered acceptance, to reduce PV's, but led to another issue. Reduced PV's impact (FTC9) was framed as an 'impasse' which 'restricted heating system', thereby 'not racking-up the points' to achieve desired Code levels. This compounded Planning/Zoning challenges, framed exasperatingly as 'being ridiculously obstructive' (FTC10). These consequently triggered the client's core

value, Concern for Human Welfare, driving the abandonment of higher sustainability levels previously agreed. "It was killed off by a combination of conservation, self-interest groups, and lawyers, despite all the decision-makers within the church wanting to do something!".

These examples extend previous conclusions by showing ineffective frames triggering different, frequently unsupportive values. Carefully managing tangible impacts from critical challenges to projects should also encompass sensitively managing temporarily intangible impacts of problem frames triggering and shifting the client values which underpin their sustainability decisions.

5.2.2.3 Residential clients

All three residential clients responded unfavourably to two Frame Options because they triggered values prioritised higher than sustainability. These clients were more sensitive than community clients to frames communicating challenges and negative or disparaging evaluations, where challenges to their values were interpreted unfavourably.

Planning objections to roof-mounted PVs were framed as 'not in keeping' or 'creating adverse visual impact' on the countryside, national park, or historic village (FTR4-6, Table 89). Then, decisions reached through earlier frames linking sustainability to Statutory Compliance, Family or Ethical Responsibility values were all overturned with objections framed negatively. Even frames attempting to resolve objections (FTR5) by saying that 'not challenging objection costs more money'; and 'alternatives will affect their garden and views'; were met with unfavourable decisions because they triggered (V_{CL}) Statutory Compliance and Respecting Authority driven by Family Responsibility. Similarly, such planning objections triggered Project Viability/Loss vs. Gain values alongside Statutory Compliance, eliciting decisions against renewables entirely, saying 'well I don't really want it anyway'.

Framing cost challenges (FTR6) to residential clients also triggered values unfavourably, but the values and decisions triggered were contingent on how costs were framed. In two cases, the architect's evaluations and feelings expressed through their frames triggered values shifts, then unfavourable decisions. First, framing higher sustainability levels as "ambitious" followed by framing that 'it's beyond the minimum requirements' gave clear messages that sustainability costs were unnecessary. This triggered values of *Best* Beneficial Use (cost perspective), priming their concerns about gain/loss, and triggering unfavourable decisions despite having effectively linked sustainability to Beneficial Use (family asset) and Family Legacy/Responsibility. As the discussion concluded, "[CL] 'well do we really *need* these things?' [AR] You know, nobody can make you do it… [CL] 'well in that case we won't'…!".

In the second case, excessive tender costs were framed with palpable frustration towards project impacts from the client's earlier short-sightedness in avoiding professional cost plans. Framing high costs and frustrated evaluations triggered values of Project Cost/Viability (Threat of Loss) and Affordability driven by Family Responsibility (as core value), triggering negative decisions. "Despite their initial 'ethical' commitment and agreeing to significant sustainability measures"—derived from family and environmental values—the architect said, "they scaled it right back to the minimum necessary to get through Building Regs…!".

5.2.2.4 Commercial Office clients

With the commercial clients, pursuing BREEAM was previously linked effectively to (V_{CL}) Supply-Chain Reporting and Sustainability's Marketing Value. Proceeding with BREEAM Good/Very Good rating (FTO3) was framed as a 'cost uplift' beyond basic regulations: "just to monitor and go through the process was an *extra* £80-odd-thousand pounds". Adding weight to terms such as '*uplifts* beyond basic regs' and '*extra* costs', likely gave the impression that BREEAM is money for nothing—

no capital or physical gains as desired, let alone ecological or social. Despite that earlier link, BREEAM framed without any immediate capital or physical benefits was met with client rejection because their earlier values were overruled or overpowered later by frames triggering core decision-making values, Profit and Competitiveness.

Across all these unfavourable frame options, one effect is clear: they triggered different, core values or shifted previously sympathetic values away from or against sustainability to motivate unfavourable decisions. This therefore behoves speakers to choose Frame Options sensitively by client and context whilst maintaining vigilant awareness of values' shifts communicated through other's frames.

5.2.3 Favourable frame options with Profit/Gain/Benefit values

Framing sustainability to clients with values regarding Profit/Gain/Benefit garnered less support. Frames connecting with these values generated some positive effects, mainly in earlier phases. Forms of client values expressed as Profit/Gain/Benefit (Table 90) were fourfold: Financial Profit and Gain (Commercial), Beneficial Use (Residential), Personal Gain/Benefit from lifestyle conveniences (Residential), and Community Benefit (Community). For Commercial Office and Residential clients, expressions of these values tended towards inward or individualistic natures concerning self-enhancement and financial security/conservation. Therefore, effective framing appealed to more self-orientated or financially-beneficial goals as reasons i.e., motivations for pursuing sustainability. For Community clients, foci were outward/other-facing and effective framing appealed to values expressed as Community benefits.

Table 90 Client Values Themes: Profit/Gain/Benefit-type values

CL TYPE	VALUES THEMES	Analysis elements
Private Resi	Beneficial use for financial gain; Financial Legacy	4
Private Resi	Country Lifestyle; Modern Conveniences	24
Commercial	Profit, Financial Gain, Cost	16
Commercial	Competitiveness + Business Growth (Profitability)	12
Commercial	Marketing Value of Environmental Sustainability; Compliance, Accountability (Profitability; Competitiveness + Business Growth)	8
Community	Community Benefit (Community Responsibility)	24
	Totals:	88

5.2.3.1 Typical Frame Options Favourable with Profit/Gain/Benefit values

Only one Frame Type was typically effective with these Community and Residential client's Profit/Gain/Benefit values (Table 91). Frame Effects on decisions—and their endurance—were contingent on these values' focus on either others or self (respectively).

Table 91 Favourable Frame Types/Options, Profit/Gain/Benefit values

For these Client Types	**[FT] These Types of Frames triggered *favourable* decisions**	**Exemplar Quotes of effective frames with Clients expressing Values themed as Profit / Gain / Benefit**
Residential and **C**ommunity	FTRC1 BR: Initial Probing: for interest in sustainability	[F_{AR}] I think it's [sustainability] introduced fairly early, almost at the first briefing session to be truthful, because it's something we need to find out and understand... They've got things that need addressing which will be of big help to them. (Community clients)
		[F_{AR}] …the client wanted a new house in a historic downland village… I think what I tried to do was get—its best I suppose as a loose sort of commitment [to sustainability] (Residential clients).
Residential only *(Continued below)*	FTR7 Design Development (DD): SD practicalities of desired options	[F_{AR}] I've had to sort of explain all the practicalities of the [Code 5] features they were asking for... 'Well, if you want to go to the ultimate water saving, you realise we are talking about a toilet with half the flush capacity than the one you've got at the moment. And you're going to be talking about showers that turn themselves off if you don't move. And you won't have a bath because it uses too much water.'
	FTR8 DD: Renewables targets and standards	[F_{AR}] In that case, [if you want a bath] we can't go to the ultimate water saving, because you're not going to meet the standards.' And you start to almost come back and you find out what it is they *really* want.
		[F_{AR}] But you can't have [an open fire] with this level; [its] not going to meet the standards …that destroys every heat loss calc-anything calculated you can ever do.
KEY:	**SD**: Sustainability/Sustainable Design/Sustainable Development **FT**: Frame Type **BR**: Briefing Phase **DD**: Design Development Phase	

(Continued below)

Table 91 (cont.) Favourable Frame Types/Options, Profit/Gain/Benefit values

For these Client Types	**[FT] These Types of Frames triggered *favourable* decisions**	**Exemplar Quotes of effective frames with Clients expressing Values themed as Profit / Gain / Benefit**
Residential only *(Continued from above)*	FTR9 DD: Multiple energy efficiency measures	[F_{AR}] Now we could g*et al*l sorts of solar panels on that, it's big enough to have a GSHP in the garden area because it's basically backing on to fields, we can have wood-chip boilers, we can have underfloor heating, we've got reasonably big windows without being overly big, …and we will have a lot of insulation and upgrading of the fabric.
	FTR10 DD: Options to achieve Code 5	[F_{AR}] …[we] came up with a good set of options for her to think about… trying to get to Code 5, which is probably a bit ambitious, but let's give it a go.
Community Benefit	FTC11 CD: Sustainability/ Sustainable Design Benefits	[F_{AR}] That's what I started to do right from the first briefing meeting. 'One of the aspects of this building, whatever it is, is we need to make it as efficient as possible. The big benefit to you is the running costs in your use of the building.'
		[F_{AR}] I think it's [sustainability] introduced fairly early, almost at the first briefing session to be truthful, because it's something we need to find out and understand ... They've got things that need addressing which will be of big help to them. ...because they have a stock of buildings and they know what it is to run buildings, to run really old buildings, and the energy consumption, so it's much more of a fabric-related thing, an energy [efficiency] thing.
	FTC12 DD: SD Benefits, Details	[F_{AR}] We have the M&E consultant who's already on board saying, 'well actually, you don't need to cover it in solar panels, we need Xsqm […]. And [even] then you could feed that into the flats and you could do all of their common parts' lighting, and then you could feed some of it into the church, where you could do all of your hot water and probably most of your lighting as well.'
	FTC13 SD COSTS: Compromises to sustainability strategy	[After the Council (parent body) highlighted a funding gap] [F_{AR}] You then have to start selecting what you can and can't do…
KEY:	**SD**: Sustainability/Sustainable Design/Sustainable Development **FT**: Frame Type **BR**: Briefing Phase **DD**: Design Development Phase	

Architect's Initial Probing for Interest in Sustainability (FTRC1, Table 91) continued garnering support when framed compatibly with Profit/Gain/Benefit values. For Community/Church clients with (V_{CL}) Community Benefit, gaining interest was achieved when sustainability was framed as matter of 'addressing their needs', where sustainable solutions 'will be of big help to them', garnering Favourable decisions. Residential client's values concerned personal or financial benefits derived from new sustainable homes to suit their valued lifestyle or asset-gain, respectively. Gaining such commitments were more straightforward because their valued goals were compatible with sustainability. Framing sustainability as a matter of 'getting loose commitment' garnered Favourable early decisions.

Notably absent were effective frame options with these Commercial Office clients and Profit/Gain values, with two plausible explanations. First, effective frame options only triggered or 'worked with' values concerning Responsibility (i.e., Supply-Chain Reporting). Second, sustainability is incompatible with profit/gain. Evidence here points only to the former (although not ruling out the latter), suggesting that profit/gain was valued terminally, whereas sustainability was valued instrumentally because operating expenditures were undervalued in favour of lower CapEx. Several Frame Types were effective with either Community or Residential Clients, but none with Commercial clients. These are examined below.

5.2.3.2 Community clients

For these Community clients, two primary Frame Types were effective options: sustainability's benefits and details (FTC11-12), and later compromises to sustainability strategy (FTC13). In each case, sustainability was established enduringly by framing its benefits in contextually relevant ways, triggering key, core values focused on Community Benefits. Decisions reached thusly were difficult to overturn when challenges arose.

For the Church/Community Centre and apartments clients, sustainability's benefits were framed early as a "big help to them" alongside playing back the issues they already knew would "need addressing", including improvements to energy consumption, building fabric, energy efficiency, running costs, etc. (FTC11). Effectively triggering (V_{CL}) Ethical Responsibility; Sustainability; Sustainable Estates/Property Management as community-focused organisational values, this garnered steadfast, lasting support. Later frames detailed the benefits of specific sustainable design applications as PVs providing renewable energy to the apartments, their communal areas' lighting, the church, its hot water, and most of its lighting. This triggered (V_{CL}) Community Responsibility/Community Benefits and reinforced earlier values for Favourable decisions.

For the Community Hall clients, effectively linking sustainability earlier to their community-focused values helped establish it enduringly to withstand later challenge. Sustainability was framed first as 'big benefits' gained from 'energy efficiency improvements' to 'heating, lighting, and insulation' (FTC1-2); then, framed as effects on 'running costs-in-use' (FTC11). Reinforcing (V_{CL}) Community Responsibility; then triggering Energy Efficiency as Sustainability; and Responsibility to Maintain & Promote Assets; again, triggered Favourable decisions. Later frames of [F_{LA}] mid-project funding challenges by their parent body/Council (FTC6) did not dampen this client's resolve to build sustainably, because sustainability was linked earlier to their (V_{CL}) Community Responsibility/Benefits. Even though a funding deficit was framed as a challenge, it only precipitated the client's decision as caveat that 'they will build whatever they could afford through fundraising'. Knowing this, the architect framed any resulting compromises to their sustainability strategy as "selecting what you can and can't do" (FTC13). Importantly, earlier values-specific frames had strongly linked sustainability to client's community-focused Responsibility values. Then sustainability's significance became well-established. Rather than completely rejecting any sustainability above regulations, sustainability became 'lesser' matters of affordability/fundraising, rather than 'greater' matters of lacking values-based commitment.

These examples demonstrate two important findings. First, specific frames contextually linked sustainability with values through context-relevant language and timing. Second, different frames of sustainability continued reinforcing sustainability's relationship to client's values *iteratively* for Favourable decisions *serially*. This demonstrates the crucial, effective framing effects of establishing sustainability enduringly through contextual connections with core values.

5.2.3.3 Residential clients

Two of three residential clients expressed values themed as Profit/Gain/Benefit: Beneficial Use, or personal gain from new lifestyle and conveniences. Two notable similarities between them were identified. First, like the Community clients, these interim frames (FTR7-10,) built on earlier gains made when frames effectively linked sustainability to values and established its significance individually for each client. Second, effective frame options with these values were during design development phases, focused around detailing initial concepts whilst reinforcing sustainability goals.

With the Code 5, downland village house client, framing the practicalities of their desired options as lifestyle restrictions and compromises (FTR7-8) reinforced earlier (V_{CL}) Country Lifestyle and Modern Conveniences; but shifted Sustainability/Energy Efficiency towards 'Sustainability, without inconveniences'. The exchange in Figure 38 illustrates incompatible requirements of lifestyle conveniences and sustainability measures, suggesting that sustainability was valued as a lifestyle choice. Hence, where sustainability competed with higher-valued lifestyle conveniences—including bath and open fire—client decisions favoured lifestyle conveniences first, then sustainability. This reinforces that decisions were driven by values in priority order. Thus, avoiding overly-negative compromises requires problem-framers to detect client values' priorities, and explore their boundaries through re/framing to prioritised values.

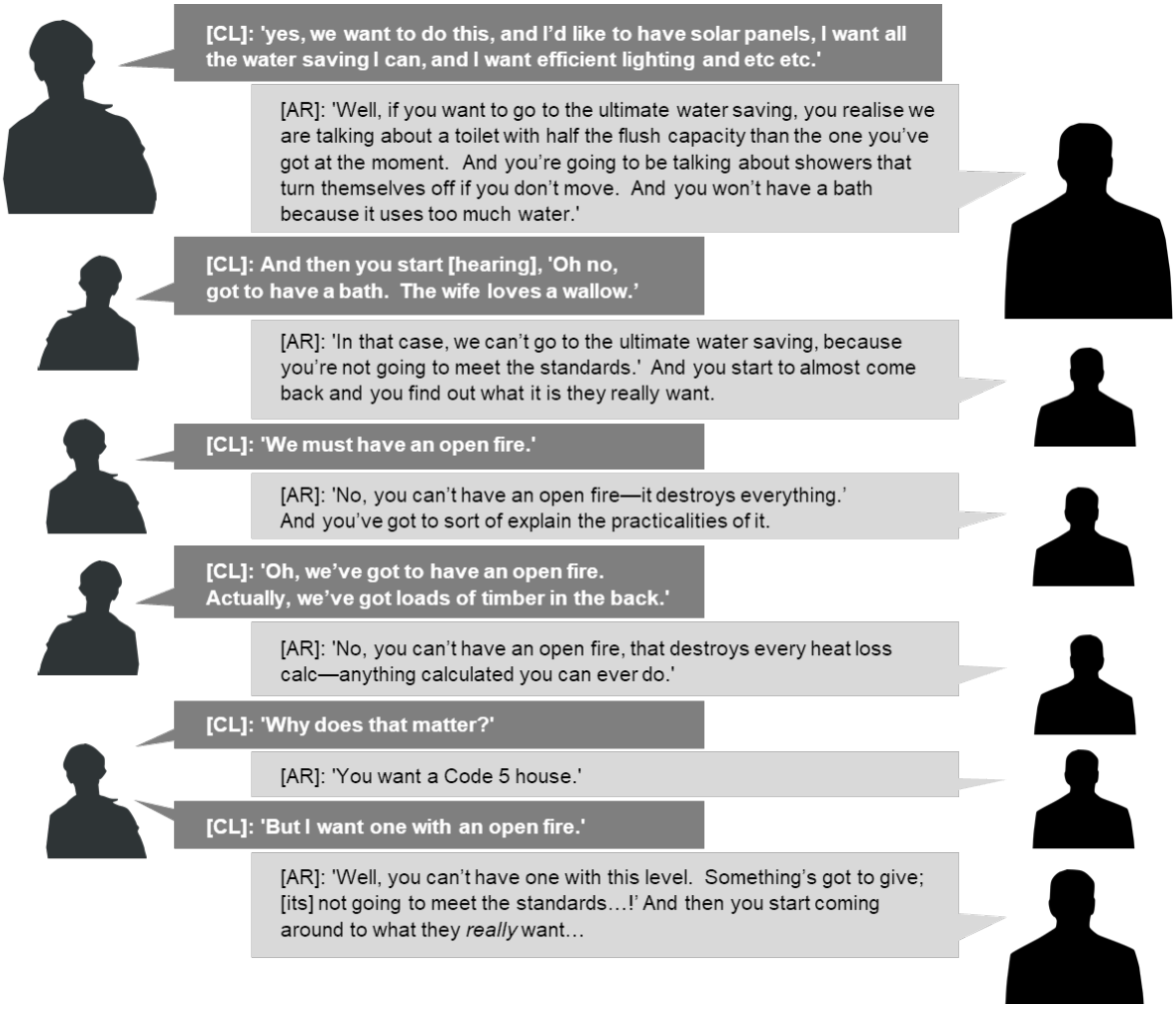


Figure 38 Discussion between one residential client and architect (based on participant's retold narratives)

For the disused farm outbuilding client, enthusiastic frames of multiple energy efficiency measures (FTR9) not only reinforced (V_{CL}) Family Legacy/Responsibility, but also shifted values *Best* Beneficial Use and *Practical*, Family Values/Responsibility (*shifts* italicised). Although the client interpreted these frames as over-enthusiastic, they continued going along with recommendations. This elicited Favourable decisions as being "quite keen on all that", but precipitated a request for professional cost advice. Framing options to achieve sustainability Code 5 (FTR10) less-enthusiastically as "probably a bit ambitious" resulted in Favourable, but less-enthusiastic, decisions. The client responded, "well oh, yes; all these things are all very nice, and we can probably put a woodchip boiler in, because I can give you a storage building next door and store

the wood chips and so on… But I don't really *need* all this" (emphasis original). Therein, doubts began.

Thus, enthusiastic frames of multiple energy efficiency measures linked sustainability with client values, but weakly. Importantly, these frames stopped short of communicating reasons *why* options were worthwhile and significant in values terms. Merely satisfying requests for a Code 5 home by framing several measures enthusiastically was insufficient to protect sustainability from being overruled by other values priorities. These frames communicated *how* client briefs were satisfied without conveying reasons *why* those measures were significant in terms of client values, incorrectly assuming the reasons were self-evident.

5.2.3.4 Commercial Office clients

No Favourable frame options were identified for Commercial client's (V_{CL}) Profit/Gain, with one plausible explanation. Effective frame options linked sustainability to (V_{CL}) Marketing, Supply-Chain Reporting, and Compliance (Table 88, §5.2.1.4), but only after their core decision-making values were made clear as Profit, Competitiveness, Business Growth, Affordability, then Compliance. Although framing sustainability to Profit/Gain was ineffective, effective routes connected with (V_{CL}) Compliance via Supply-Chain Reporting and Marketing. Importantly, the route's circuitousness is indicative of its weakness, concluding below with several Frame Options generating unfavourable decisions with Profit/Gain/Benefit values.

5.2.4 Unfavourable frame options with Profit/Gain/Benefit values

Frame Effects with Commercial and Residential client's values concerning Financial/Personal Profit/Gain/Benefit garnered the least support, eliciting

decisions typically against sustainability. Unfavourable frame options with Profit/Gain/Benefit values are outlined in Table 92.

Table 92 Unfavorable Frame Types/Options, Profit/Gain/Benefit Values

For these Client Types	**[FT] These Types of Frames triggered *unfavourable* decisions**	**Exemplar Quotes of *unfavourable* frames with Clients expressing Values themed as Profit / Gain / Benefit**
Commercial office only (Financial profit/gain)	FT04 PROBING Business plan + Fit-for-Purpose + Longer-term needs...	...our initial conversation on that was first, if he could elaborate on his business plan so that we can provide a facility that is fit-for-purpose and fulfils his needs in the longer term.
		...we [did] find out what their kind of outlook on things is [i.e., what are your interests in sustainability as a company, and in a sustainable building?] Yeah, yeah…
		...when I mentioned sustainability and energy recovery and green issues to the client, he visibly glazed over.
	FTO5 Main energy use	we went through the loop of doing ground source heat pumps (GSHP) or solar PVs; that was all related to what the main energy use on the site coming out the other end was.
		...during the tender process obviously we all took it [GSHP] forward thinking it was the way to go. We did actually have both of the PV-electric way priced, and the original GSHP-wet way priced...
	FTO6 'Lifetime' analysis results	...we did a lifetime analysis, so, you know, it came round to 'that one will cost you more in the first place but will pay you back in 10-years, that one will cost you less in the first place, but pay you back in 15. There may be more maintenance on one than the other'.
	FTO7 Cost Plan frames with UNWEIGHTED options	Ok, here's the cost plan… it is capital-to-payback, and obviously some things cost more in the initial [operation] but will save more in the long run.
Residential only (Financial Profit or Personal Benefit)	FTR11 Cost of SD measures for Code 5 house	[CL]: '[Well, I] want a Code 5 house, but I want one with an open fire; it's got to have a bath…, solar panels… Yes, I love all these things, they're absolutely great. How much are they going to cost me?' [AR]: 'It's just added £100/sqm on to the cost…' [CL]: 'Forget it…'
	FTR12 Objections to PV visibility	I've met the Conservation Officer and the Planning Officer on site, and you could see this guy walking around with a sort of concerned look on his face; and alright that downland village has been there the thick end of a thousand years… but most of it was built in the *1970's*. Now we want to put in *one house*; and it's *got* to have solar panels and etc., etc., a big elevation can face due south... (orig. emphasis).
	FTR13 Compromises to sustainability strategy	...he's [the Conservation Officer] come back with 'concerns' [about impact of modern house on historic preservation]. For god sake you know, *why*? What are the concerns, that we are actually building something that is current? Do you want us to build Anne Hathaway's cottage?!? And light it with a coal fire and candles? If you're going to do these things and you're going to meet the government's requirements for sustainable design and energy efficiency and etc etc., you've *got* to allow us to do the thing using the modern technology and modern materials. NOT try and wrap things in aspic and preserve them!!! [Again,] something's got to give...! Which I suppose comes back to people's perceptions.

(Continued below)

Table 92 (cont.) Unfavorable Frame Types/Options, Profit/Gain/Benefit Values

For these Client Types	**[FT] These Types of Frames triggered *unfavourable* decisions**	**Exemplar Quotes of *unfavourable* frames with Clients expressing Values themed as Profit / Gain / Benefit**
Residential only (continued)	FTR14 Objections	(AR to CL, challenging/questioning) ...well actually, where is your sustainability agenda going??
Community only	FTC14 Resolving funding challenges	You then have to start selecting what you can and can't do. […] But it's not going to be that simple, we've got to address the windows, the roof; but to do the roof properly you'd take all the tiles off and put a warm roof on. It could be done, you know, [it's just expensive,] it may be external insulation rendered, but we've got to go for planning then because it's brick at the moment.
KEY:	**SD**: Sustainability/Sustainable Design/Sustainable Development **FT**: Frame Type **BR**: Briefing Phase **CD**: Concept Design Phase	

5.2.4.1 Community clients

No unfavourable options were found for Community clients because, as core values, Favourable effects concerned (V_{CL}) Community Benefit, whereas unfavourable effects concerned Community Responsibility, shown above. Yet, like other unfavourable Frame Options, their effects were greater because they concerned critical challenges regarding client's desired benefits or gains, representing risk or threat to their achievement, shown below.

5.2.4.2 Commercial Office clients

For the commercial office client, the remaining sequences concern framing cost versus savings. Beginning when the architect framed details of proposed HVAC system with GSHP, this triggered Lifecycle Costs & Maintenance (Operationalised Sustainability) values eliciting favourable decisions with a request for a "lifetime analysis" (cost-benefit analysis). Framing the results as main energy use frames led with 'upfront costs' of GSHP vs PV, followed by 'maintenance bill' and longer-term savings. These frame sequences reinforced Cost-effective/Affordable Sustainability values, driven by Profitability and Market Share core values, eliciting unfavourable decisions. Framed as 'business growth' and 'capital outlay', these clients "couldn't guarantee they would still be occupying the premises in 20-years' time… he wasn't prepared to pay an *extra* 25% to save 25% over 20-years". This

demonstrates their higher-priority core values of Profit/Growth/Competitiveness. Yet, "they still market it in terms of its positives", demonstrating that valuing Sustainability Marketability/Supply-Chain Accountability/Compliance remained in their values cluster, just contextually de-prioritised then temporarily deactivated.

Importantly, these unfavourable examples show how earlier client values were initially important for the architects in establishing sustainability, but were later overruled by newly-prioritised values triggered contextually by frames. These findings also suggest that Financial/Personal Profit/Gain/Benefit values are typically incompatible with sustainability, but have been contextually moderated by compatibly framing sustainability with other prioritised values. For sustainability outcomes, this means that weak frames-to-values connections reliant on such values require multiple values-based reasons established through frames-to-values links to endure being completely overruled. However, when sustainability frames connected with any values, buildings were nearly always better than baseline regulations without frames-to-values connections. The exception was when frames-to-values connections were repeatedly weak or values lower-priority. Without multiple frames-to-values connections, clients typically overrule sustainability.

5.2.4.3 Residential clients

The downland village house client's remaining discussions involved two critical challenges concerning cost and Planning/zoning objections, where frames communicated risks or threats. Framing projected costs for agreed sustainability measures neutrally/evaluation-free (FTR11, Table 92)—lacking reasons *why*—activated higher-priority (V_{CL}) Controlled Spending/Gain, eliciting decisions against sustainability, favouring reductions to regulated minimums. Later, the Conservation Officer's 'serious concerns' about the modern house and roof-mounted PV's impact on an ancient village were framed negatively as a critical challenge and Planning viability risk (FTR12-13). The architect's patently

frustrated defence, framing modern construction as a necessary compromise to meet current standards/regulations, was ineffective. Together, these frame options communicated project risks threatening losses for the client—not of their sustainability goals, but their coveted (V_{CL}) Country Lifestyle with Modern Conveniences. Frames reinforced these values and triggered (V_{CL}) Compromise, driven by potentially losing conveniences and status from their new house in a popular village. Although not solely terminal to sustainability, [F_{AR}] earlier cost challenges set the stage for sustainability reductions alongside [F_{CO}] Planning Objections, acting as serial risks/threats endangering project viability.

In the disused outbuilding client's remaining discussions, the architect negatively framed objections to decisions reneging on their agreed sustainability strategy (FTR14), suggesting architect's values influence their frames. This triggered core decision-making values—not as (V_{CL}) Beneficial Use for Future Generations claimed earlier, but as Financial Benefit/Gain—Beneficial Use to Gain Additional Rent. Despite earlier 'keenness' on Code 5, their final decisions were based entirely around cost-efficiency to maximise rental income. Earlier frames only loosely linked sustainability to core values. But again, whatever they eventually built resulted from early, values-linked decisions supporting sustainability. Even though later decisions supported cost-effectiveness based on newly revealed core values, establishing sustainability's significance as an important goal separate from statutory compliance meant the constructed buildings were more sustainable than they otherwise would have been.

In these cases, Profit/Gain/Benefit core values concerned self-enhancement; their nature was individual, not organisational. Objections framed negatively as critical challenges to client's core values triggered new decisions not favouring sustainability, but values concerning self-enhancement/conservation and self-protection to defend valued goals. Framed risks/threats of loss to individually

valued project factors drove the client's capitulation to cost and critical objections with decisions favouring project viability and individual, but values-based goals.

5.2.5 Reflection and transition to Group G3

These findings reinforce that decisions linked to values hallmarked meaningful choice, but not all meaningful choices were favourable to sustainability. Identifying and framing to the values clients 'bring' and those contextually triggered by frames are both critical to predicting and modifying client's decision-making behaviour more consistently and enduringly towards sustainability. Taken together, the findings contribute to systematically confirming the exploratory values-and-frames conceptualisation. More specifically, these findings add to the previous findings by applying the core Values-Framing concepts to reveal new, more immediately-useful Frame Options that work for three predominant client-types with two predominant values-types. Thus, opportunities are numerous where Frame Options can be utilised to create more space for meaningful choice via values.

For practice, the findings include tabulated Frame Options providing clear, worked examples for several Client-Types showing three key things: which client values manifested in sustainability decision-making; which frames worked with those values to motivate sustainability decisions and capitulations; and what valuing sustainability looked like in multiple architect-client cases. Taken together, it suggests human values are key and accessible 'mediating variables' in sustainability communication and evaluation during decision-making, as previously argued (ES2c/§4.3.3). SS1 also confirmed ES3c findings that sustainability's meaning was interpreted using values as criteria to guide both framing and decision-making.

This new empirical evidence can inform practical methods for professionals because the Frame Options provide worked examples useful for values

identification and framing in practice. The findings can help professionals calibrate their messages to work better with client values as stated, interpreted, or implied ideals/goals. Consequently, better options could be formulated by contextually framing sustainability more favourably—and enduringly—to individual clients through better frames-to-values connections via individual, values-based meaningfulness. Knowing this, interested parties can use the tabulated findings as templates (e.g., Table 88, 91) to guide future interactions and potentially motivate better, more enduring decisions towards improving the quality and frequency of decisions favouring sustainability. This is useful because values-framing tools can be applied in routine practice by anyone interested in sustainability improvements and/or client satisfaction. Because project sustainability both concerns and benefits clients and wider communities and can be linked to values via frames, these architects' clients seemed more satisfied with project outcomes when they fulfilled their valued goals. Such tools can be easily incorporated into professional's workflows with minimum disruption.

Two new emergent factors are shown in Table 93 below. These findings would benefit from further verification with other architectural approaches, specifically design- and sustainability-orientated, alongside an examination of critical success-factors. Hence, this informed the final phase below.

Table 93 Key emergent factors in Systematic Study SS1

#	Emergent factor	Description and treatment
26	Values-based frame options	Potential for creating Spaces for Meaningful Choices via frame options to show types of discussion content that work with client (or stakeholder) values, whether pre-known or emergent; Values-based frames are further examined in SS2b-SS2c/§5.3.3-5.3.4.
27	Client Values Recognition (V_{CL}-RECOG) is an opportunity to Predict and Modify CL-DM	Client Values Recognition (V_{CL}-RECOG) involves identifying and framing to the values clients 'bring' and those contextually triggered by frames are both critical to predicting and modifying client's decision-making behaviour more consistently and enduringly towards sustainability, thus maximising opportunities for more meaningful choices with the meaningful-choice-spaces created. Client Values Recognition further examined in SS2a/§5.3.2.

5.3 Study SS2: Second Systematic Study: Values-framing

The final phase of research with primary data from 20-cases with Group-G3 participants (Figure 2) systematically focused on confirming, contradicting and revising, or extending earlier (commercially-orientated) findings with design- and sustainability-orientated architectural practitioners. Using the earlier-established methods, this three-part study was designed to systematically map (MA4/§5.3.1) and confirm architects' understanding of others' values and any success-factors therein (or **A** in SEQ2b below, SS2a/§5.3.2), to then understand success-factors in how that values 'data' functions in these practitioners' framing (or **B**, SS2b/§5.3.3) to help create meaningful-choice-space. One final emergent factor from the Pilot Study concerned architects' broader-scoped strategies as 'framing approaches' (or **C** below). These are examined through the study of frame effects on decisions via values with 20 rich architect-client cases and case-maps, shedding new light on opportunities for meaningful-choice-space (SS2c/§5.3.4). Key refinements to the mapping method are first summarised, followed by the three study-parts, and a concluding reflection (§5.4).

$$SEQ2b\text{: } \underbrace{\underbrace{[\![(V_{Speaker}) \rightarrow [F_{Speaker}]]\!] \rightarrow \overbrace{[\![(V_{Decisionmaker}) \rightarrow [F_{Decisionmaker}\ ]]\!]}^{\mathbf{A}}}_{\mathbf{B}} \hookleftarrow \cdots}_{\mathbf{C}}$$

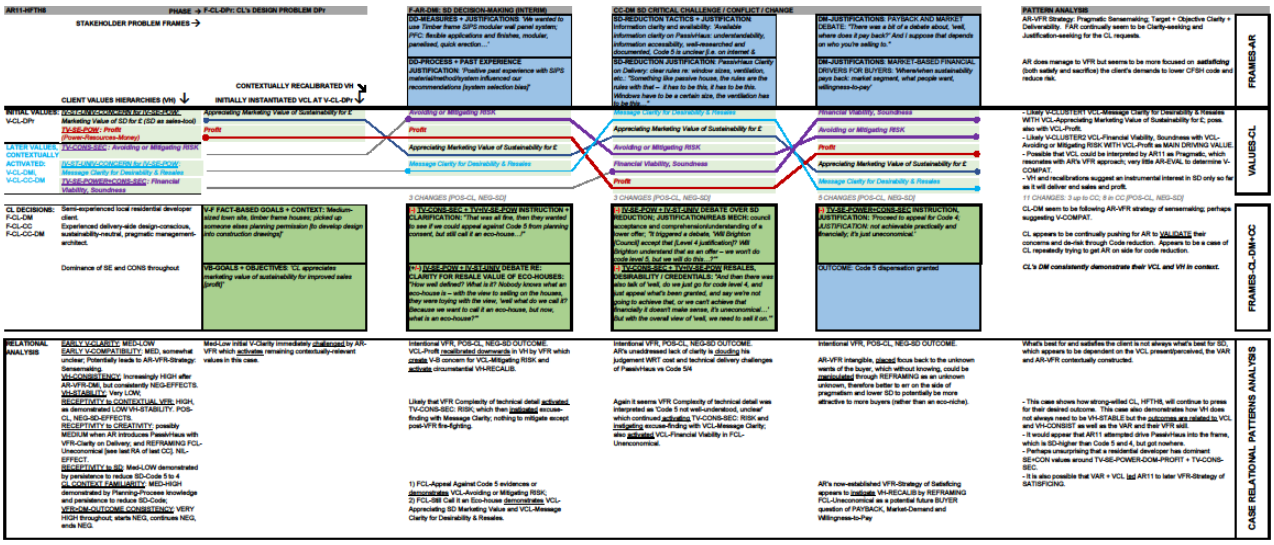
5.3.1 MA4 Mapping refined: values influence pathways

The purpose of this mapping study was to employ the previously established mapping method to map values influence pathways via frames to interim then final decisions, developing the techniques if necessary to account for previous findings and any missing elements. The mapping methods from MA3 were adopted and

refined with one graphical development and one important analytical development. Graphical representation of client values clusters was developed to show priorities of interpreted values clusters contextually-recalibrating with coloured lines showing movement patterns (Figure 39). The map analysis method was developed with new analytical overlays to show pattern analyses. These are briefly summarised below.

To map any variations in values clusters responding to frames in context, MA4 developed the graphical representation showing the values clusters always remaining listed by priority top-to-bottom, with shifts and changes in values priorities as variation of lines connecting earlier with later values, and content shifts by their text descriptions. The presence and ordering/prioritising of multiple values instantiations signified a collection of values in a 'hierarchy': higher-priority values at the top, lower-priority values at bottom. To systematically analyse the maps, analytical 'overlays' were added to the right-most column to show cross-case pattern analyses by participants' frames (top), then clients' interpreted values (middle), then clients' decision-frames (bottom). Overlays added to the bottom-most row show relational analyses by framing discussion as unit-of-analysis. Typical cross-case pattern analyses were added in the bottom-left, and broad cross-case relational pattern analyses at bottom right, incorporating an overview analysis of the entire case.

Figure 39 (below) MA4 Sample refined map (AR11-CLH8); for colour-coding, see Table 99
(See Appendix-6.1 for full size map)


AR11-HFTHB
PHASE → F-CL-DPr: CL's DESIGN PROBLEM DPr
STAKEHOLDER PROBLEM FRAMES →
CLIENT VALUES HIERARCHIES (VH)
CONTEXTUALLY RECALIBRATED VH
INITIALLY INSTANTIATED VCL AT V-CL-DPr
F-AR-DM: SD DECISION-MAKING (INTERIM)
CC-DM SD CRITICAL CHALLENGE / CONFLICT / CHANGE
PATTERN ANALYSIS
FRAMES-AR
VALUES-CL
FRAMES-CL-DM+CC
CASE RELATIONAL PATTERNS ANALYSIS

To determine if there were any other theoretically-relevant properties or patterns to the mapped values and their priorities, each client value was coded to signify, first, Rokeach values' families as terminal/instrumental (TV, IV) (Rokeach, 1973), then Schwartz value category by higher order (ST, SE, OTC, CONS), and middle order (UNIV; BENEV; SEC, etc.) (Schwartz *et al*., 2012). Lower orders (Tradition, Achievement, etc.) were included where similarities were warranted. However, lower orders were sometimes not directly applicable to the values instantiations found in the current context, suggesting that the values manifesting in architectural projects are applicable therein and not necessarily applicable universally to, say, family life. Future research could examine the relationships between AEC project values and the various conceptualisations of values systems.

Thus Group-3 case-maps show 20 rich architect-client cases which confirm and refine previous mapping methods. A more complete, refined sequence for values influence pathways via frames is shown below, RSEQ3, which appends a prefix to SEQ2b:

$$\text{RSEQ3: (V)} \rightsquigarrow \text{VIA\_[FR]} = \langle(\mathrm{V_{AR}}) \rightarrow [\mathrm{F_{AR}}]\rangle \Rightarrow \langle(\mathrm{V_{CL}}) \rightarrow [\mathrm{F_{CL}}]\rangle \cdots$$

Together the maps showed 'values hierarchies' comprised clusters of active, instantiated values by priority, whilst simultaneously showing any other values which may have previously instantiated but have become contextually deactivated or dormant in response to contextually-relevant problem frames. This applied to both participants and their interpretations of their client's values, further detailed in Appendix-5.1. The map findings continued to show that participants clearly identified not only single or dual values they interpreted as influencing client's decision-making, but also clusters of multiple values in priority order—values hierarchies. Details of their characteristics and dynamics broadened this conceptualisation, and are therefore examined below. Relating patterns of these

values-and-frames interaction dynamics to meaningful choice provides a new perspective on gaining and losing opportunities for meaningful choice, as examined in the three final parts.

5.3.2 SS2a Success factors in values-framing: Architect's interpretation of client values

Refining the earlier-established methods, 20 rich architect-client cases and case-maps from design- and sustainability-orientated architects were examined to know more about participants' understanding of client and stakeholder values, or **A** in SEQ2b.

$$SEQ2b\text{: } [\![(V_{Speaker}) \rightarrow [F_{Speaker}]]\!] \overbrace{\rightarrow [\![(V_{Decisionmaker})}^{\mathbf{A}} \rightarrow [F_{Decisionmaker}\ ]]\!] \hookleftarrow \cdots$$

This would be both important and useful because values both manifest and communicate meaningfulness, whereby knowing more about how participants interpret others' values would help demonstrate the values basis on which they frame sustainability. Thus, the purpose of this study-part was threefold, with guiding question and purposes outlined in Table 94.

Table 94 SS2a Guiding question and purposes

Category	#	Element
GUIDING QUESTION	Q1	How are participants accurately interpreting client values to ensure the values basis on which participants frame sustainability?
PURPOSE	P1	To establish how participants came to understand client values in context and over time by understanding how they identified or established those values' presence, then interpreted their effects. This includes themes of critical factors in participants interactions with their clients, taken from participants' perspectives because earlier studies showed that they were in fact more relevant to knowing how client values data influenced architect's formulation and framing of sustainability options, on which client decisions are predominantly made.
	P2	To understand how participants interpreted client values and shifts over time by understanding themes of key factors.
	P3	To identify any useful factors and patterns for architects to know about interpreting client values over time towards sustainability improvements via decision-making.

Participants were specifically asked which of the client's values were affecting their decision-making about sustainability at each of the three key phases: initial, interim, and critical-challenge/final decision-making. The findings showed both the content and process of architect's values identification and interpretation. Highlights of the key findings follow below, with additional detail provided in Appendix-5.

5.3.2.1 Key findings on architects' values interpretation in context

Several success factors were found across the twenty cases which may provide useful guidance to improved values-identification and values-framing in practice, outlined in Table 95. Typical examples of client values 'content' and how participants accurately formed interpretations of them are discussed in §5.3.2.2 below. New themes of values' identification and interpretation 'process' and 'structure' are discussed in §5.3.2.3-5.3.2.4 below both support and extend previous findings from ES3 and SS1. These are important because they show how participants understand and make sense of client values to then inform ways to create more space for meaningful choice by framing sustainability to be more individually-meaningful via values compatibility. Knowing first how values were apprehended and interpreted, their content can then be conceptualised and structured.

Table 95 Success factors in values-framing

Success factor	Description	Section
Accurate values interpretations	How well participants identified, interpreted, and responded to client values via decision-making and frames.	§5.3.2.2
Values clustering and ordering in hierarchies	How participants interpreted client values becoming active and/or dormant via clients' frames of their design problems and decision frames.	§5.3.2.3
Properties and dynamics of Values Hierarchies	How participants identify fluctuations, variations, and shifts in client values hierarchies.	§5.3.2.4

5.3.2.2 *Forming client values interpretations*

Through their probing of client's framed needs, initial values elicitations, and values expressions, architects formed and employed values interpretations to begin boundary-sensing of available choice-space. Hence, knowing about architect's understanding of client and stakeholder values is both important and useful because values both manifest and communicate individual meaningfulness in context. More space for meaningful choice can then be made by knowing what is valued and therefore more meaningful to clients through more accurate interpretations of their values, using these findings as guidelines. Several themes were identified in how participants ascertained (e.g., by finding, eliciting, discovering), and recognised or interpreted (e.g., by understanding, sensemaking, assigning meaning) client values in their compound framing and decision-making processes. Five key themes form useful success factors when forming client values interpretations, shown in Table 96, briefly summarised below.

Table 96 Five success factors of accurate values interpretations

Key themes	Description	Action
Decision-making can be values-expressive behaviour	The process and act of choice (and framing) in decision-making processes are values-expressive behaviours, with problem-frames and decision-frames as 'vehicles' requiring attentiveness	To identify values, participants first needed to be attentive to their manifestation through both decision-making frames-as-vehicles and their contents/ characteristics. Missing the vehicle means missing its contents and therefore the opportunity to find more meaningful lines-of-argument for sustainability options. Thus, decision-making is a mode of values expression thus pregnant for architect's apprehension. Knowing this, professionals can monitor choice- and decision-making behaviour for cues and clues on client values. Architects can also regulate their own behaviour similarly knowing that it too provides others with windows on values.
Decision-making frames manifest and express values	Clients' framed decisions manifested and expressed the values associated with the decision through frames' content and characteristics.	
Client Values Recognition (V_{CL}-RECOG)	Participants recognised values when they acknowledged their presence & could make known those values, cognising their meaning & connecting them to other meaning structures in memory, which is important for framing. Positive interview tone & ready-recall of client values related with both the number/ quantity & quality/detail of values recalled.	Participants who were more astute at initially detecting and recognising client values (then later observing movement patterns) were better able to respond to their client's needs. Their significance is multiplied and became demonstrable in architect's conduct of framing processes, frame-building, and consequential frame effects as summatively unfolding below. Through improved values recognition, better values-specific framing vocabularies, and associated improvements to framing, **net sustainability may then increase**.

(Continued below)

Table 96 (cont.) Five success factors of accurate values interpretations

Key themes	Description	Action
Client Values Clarity (V_{CL}-CLARITY)	Clarity both initially and throughout meant their meaning was easily comprehensible and not obscure. Taking a preliminary opportunity to detect, recognise, and achieve clarity in the client's values, the architects were better able to later fulfil the client's needs. V_{CL}-Clarity was found through numbers and types of client values recalled, early versus later.	Clarity allowed architects to formulate problem-frames more meaningfully through links to client values. Some clients' values were very clear and remained so throughout, like 'Sustainability and Well-being' or 'Lovely Family Home in the Country'. Whereas lacking clarity degenerated opportunities for framing and making meaningful choices about sustainability, like one clients' earlier value was expressed as Beneficial Use for Future Generations, but later manifested through their decision-frames as Beneficial Use (for Future Generations) for profit. Without V_{CL}-Clarity, architects were left to framing by trial-and-error and missed opportunity.
Architect-Client Values Compatibility (V-COMPAT.)	When architects recognised appealing values-qualities in clients, or similarities with their own values, this suggested that their values were compatible. So too with the obverse, which was usually more pronounced. V-COMPAT Found when architects sense or detect V_{CL}, recognise them, and associate with them as, A) not incompatible with his own, or B) similar to their own, and/or, C) desirable instrumentally or terminally in-themselves.	Nearly all participants have shown it was difficult—but not impossible—to overcome incompatibility to frame sustainability more meaningfully and enduringly. Later Low VCL-COMPAT precipitated by late and near-total reversal of all previous sustainability-related values prompted a dissociation when this was recognised, followed by negative, critically challenging frames then communicated, resulting in sustainability reductions. However, two showed it was possible to overcome Low V_{CL}-Compatibility and bias and frame to incompatible values for sustainability gains.

The first two factors describe how client values manifested to participants. Firstly, findings from ES2b showed that framing and decision-making are values-expressive behaviours. Secondly, findings from ES2b-ES2c also showed how clients' framed decisions manifested and expressed the values associated with the decision through frames' content and characteristics. Three further success factors were identified as critical to participants' more effective interpretations of those values. Fourth, participants who were more astute at initially detecting and recognising client values (then later observing movement patterns) were better able to respond to their client's needs, usefully abbreviated as V_{CL}-RECOG. Fifth, following recognition was the clarity of client values, both initially and throughout (V_{CL}-CLARITY). V_{CL}-Clarity meant their meaning was easily comprehensible and not obscure, which allowed architects to formulate problem-frames more meaningfully through links to client values. Lastly, architect-client values

compatibility affected how architects interacted with their clients (V-COMPAT). When architects recognised appealing values-qualities in clients, or similarities with their own values, this suggested that their values may be compatible—so too with the obverse, which was usually more pronounced (see Table 96). Taken together these five key success factors contributed to the accuracy of participants' values apprehension behaviour. Relations between V_{CL}-Recognition, Clarity, and Compatibility supporting these conclusions are shown in Table 97. This opens the discussion into characterising and structuring client values in context and then themes and properties of those structures. Further themes were found which expand on these findings on accurate values recognition and interpretations, in both the next and last parts of this study.

Table 97 Relations between V_{CL}-Recognition, V_{CL}-Clarity, V_{CL}-Compatibility for Group-3

AR#	CL#	#VCL	VCL-Recog.	Early VCL-Clarity	Early #VCL	Later V-Clarity	Later #VCL	#VCL-Varies	Clarity-Varies	VCL-Compatible	Ave-#VCL
AR11	CL-P1	8	High	Med-High	4	High	4	+	+	Med-High	6
	CL-O3	6	Medium	Med-High	4	Med-Hi	2	/Stable	/Stable	Low	
	CL-H6	5	Low	Low	1	Med-Hi	4	+++	++	Low	
	CL-H8	5	Medium	Low	2	Med	3	+	+	Medium	
AR13	CL-B1	6	Medium	High	4	High	2	+	/	Med-High	6.67
	CL-H4	7	Med-Hi	High	4	Med-Hi	3	+	-	High	
	CL-S5	7	Med-Hi	Med-High	3	High	4	++	+	Med-High	
AR14	CL-S2	9	High	High	4	Medium	5	++	-	High	9
	CL-H3	11	High	High	6	High	5	+	/	Med-High	
	CL-B6	7	Medium	Low-Med	2	Medium	5	+++	+	Low	
AR15	CL-H1	10	Med-Hi	Med-Hi	5	Low	5	+	-	High	8
	CL-D2	6	Low	High	4	High	2	/	/	Low	
	CL-S3	8	Medium	High	5	High	3	+	/	Med/Med-Hi	
AR16	CL-V1	7	Medium	Low	3	Med-Hi	4	+	++	Medium	6
	CL-H2	5	Medium	Med-High	4	Med-Hi	1	/	/	High	
	CL-L3	5	Med-Hi	Med-High	4	Med-Hi	1	/	/	Med-High	
	CL-V5	7	Med-Hi	Med.	4	Med-Hi	3	+	+	Medium	

The first two themes about relations between decision-making, values, and frames form a bipartite extension to earlier findings with findings on the characteristics of

values expression and manifestation through decision-making. The three factors of client values recognition-clarity-compatibility form a tri-partite extension to earlier findings, by providing new detail on three key factors of architect's understanding and use of client values 'data' during their interactions. Thus, more space for meaningful choice can be made by knowing what is valued and therefore more meaningful to clients through more accurate interpretations of their values using these findings as guidelines.

5.3.2.3 Client values manifestations: Content and structure

Having confirmed the usefulness of architects' values interpretations, numerous clients' values clusters showed that the qualities and characteristics of values 'content' varied in predictable ways between commercial-, design-, and sustainability-led architects. Typical instances are shown in Table 98 below. When examined for patterns over time, the results reinforced earlier findings from ES2a-ES2b and ES3a-ES3b, and presented some interesting new variations about the interrelations of values manifesting in context.

The maps from MA4 showed that architects interpreted not only clients' values, but also their priority manifesting through client decision-frames. This was attributed to participants interpreting that their client's decisions were influenced/motivated not only by their values in priority order, but also more importantly that *dominant* values in context typically drove clients' decision-making, whereby the sustainability frames which were compatible with dominant values were most effective. It was therefore possible to attribute participants' noting client values and their dominance in context as critically important to their more accurate—and enduring—values-framing. By knowing values' priority, i.e., dominance in a hierarchy, architects as problem-framers could respond with appropriately-calibrated frames by emphasising the priority of sustainability's characteristics in relation to dominant values (in relation to other priorities).

Table 98 Typical themes and instances of client values educed from interpretations of design- and sustainability-led architects.

Value Theme	Value Instantiation
Conformity, compliance	Fulfilling Statutory Requirements
	Doing what we need to
Trust	Trusting our advisors
	Trust the architects as professionals
Quality, Value	Higher standards
	Good Quality with Added Value
	Good design
Profit, Financial value, Cost	Saving money
	Profit
	Profit (with Added Value)
	Maximised land value
	Cost-effectiveness
	Value-for-money / Cost Savings
	Simplicity for Cost-effectiveness
Marketing value, Financial benefits	Marketing Value of Sustainable Design for increased profit / SD as sales tool
	Buying green for personal tax benefits
	Green agenda for Sustainability Identity
	Future Marker
Connection, Commitment, Future-Proofing, Lifespan, security	Family Values, Togetherness
	Long-term Commitment
	Long-term Connection
	Longevity and Lifespan
	Future-Proofed; Lifespan
	Future-Proofing, Low Running Costs
Pragmatic	Tangible, Practical, Pragmatic
	Pragmatic Sustainability
Understanding	Understanding SD technical process; Knowledge
Sustainability	Sustainability (Energy & Environment)
	Sustainability and Energy Performance
	Sustainability and Well-being/Mobility
	Green Building / Sustainable design
Nature, landscape	Naturalistic Experience, Connection to Nature
	Connection and Access to Nature
Nature conservation	Landscape and Conservation Appreciation
	Conservation, Restoration
Lifestyle, setting	Sustainable lifestyle
	Dream house, Dream home
	Sustainable Lifestyle, not money
	Traditional Country Lifestyle
	Providing Welcoming Estates

Thus, because architects interpreted that client values manifested in priorities, and that some values were more dominant, their framing to dominant values was most effective.

For instance, one client's repeatedly dominant value 'Dream House (cost doesn't matter)', was recognised, clear, and compatible. However, it later transpired that when opportunity arose to sell the planning consent for profit, their values priorities radically shifted by trading-off with a more dominant value of 'Serial Opportunity for Profit [and Interest]'. Noting these priority shifts, contextually-relevant frames could respond by framing sustainability's profit-related characteristics, like return-on-investment, payback periods, long-term savings on fuel bills, running costs, and maintenance. The other values still mattered, only less so. Whilst the evidence showed that that a human value was 'traded-off' with or suppressed by another value in a contextually-responsive hierarchy, it is conceivable that values may be traded-off

with other non-values constructs like beliefs. However, the study focused only on values (and frames), and uses a 'thick' description (as Ryle, 1971) of values as defined in §2.3.4. Although this 'thick' interpretation may present the illusion that values are ubiquitous, such interpretations more accurately and inclusively address the context of both decision-making and communication framing as values-laden and their acts as values-expressive, thus a more inclusive values-rich perspective (after Geertz (1973) and Ryle (1971), using rich descriptive context to understand the phenomena (cf. Ponterotto, 2006), and as in values guiding behaviour and therefore (decision-making) behaviour interpretable as values-expressive (as Roccas and Sagiv, 2017)).

Operationally defined, Values Hierarchies were interpreted as ordered clusters of prioritised values instantiations in context, simultaneously showing some values dominant and other, previously instantiated values have become contextually deactivated or dormant because they were considered less or not relevant to the client deciding about a current, framed decision-problem. It was thus possible to show the impact of frames in context by the values' manifestation, priorities, and activation or deactivation in a time-specific snapshot as values hierarchies. A sample values hierarchy is shown in Table 99. It shows phase-types as initial-instantiated or later contextually-activated; the classification/order, and the client's values statement as elicited and coded; values evidenced as higher-priority in decision-frames are higher, and vice-versa.

Regarding the classification/order of values in hierarchies, it was ultimately found that despite some patterns of self-enhancing or self-transcending values, what typically mattered most was not values classifications but their dominance and qualities/characteristics. Once values' dominance was established, then values' qualities/characteristics were important as 'content' to inform better framing of sustainability to be more individually meaningful, to then help motivate/influence

more favourable decisions in support of sustainability. Thus, these findings and conceptualisation of dominant and prioritised values and shifts in response to frames over time shed important light on routes to maximise opportunities to create space for meaningful choice. Analyses of the twenty cases produced some interesting findings on how participants were interpreting the effects of their frames on client values, described below.

Table 99 Typical client values hierarchy (AR14-CL2)

Phase-type	Classification/Order	Values Statement
INITIAL VALUES: V-CL-DPr	IV-SE for TV-C+CONS:	Exploring / exploiting possibilities / maximising potential for 'lovely house' AAEQRA
	TV-ST+CONS+OTC:	Sustainability's Environmental Benefits; Environmental Sustainability
	TV-ST+SE:	Friendships; Maintaining Local Connections
	TV-CONS+SE:	Legacy; Comfortable Retirement Lifestyle
LATER VALUES, CONTEXTUALLY ACTIVATED: V-CL-DMi, V-CL-CC-DM	**IV-SE for TV-CONS +SE (+OTC?)**	Best Value Performance & Energy Efficiency within budget (pointing at lifecycle cost-benefit)
	IV-SE for TV-CONS +SE:	INTELLIGENT SPENDING: Well-researched, balanced, controlled spending to achieve Value-For-Money
	IV-SE for TV-CONS+SE(+ST):	COST-BALANCING to Fulfil Design Intent (incl. Sustainability Measures) Cost-Effectively
	IV-SE for TV-CONS+SE:	BALANCING (Competing) AGENDAS for Project Completion
	TV-CONS+SE:	(Achieving) Value-for-money

KEY:
Black = Instrumental Values initially instantiated;
Red = Terminal Values initially instantiated;
Cyan = Instrumental Values, later contextually activated;
Purple = Terminal Values, later contextually activated

TV= Terminal Values
IV= Instrumental Values
SE= Self-enhancement
CONS=Conservation

ST= Self-transcendence
OTC= Openness to Change

5.3.2.4 Values hierarchies: Key properties and dynamics

Several key themes were identified in the properties and dynamics of values hierarchies which described their relationships in response to participants decision-problem frames, outlined in Table 100. These themes contributed to architects' recognising client values as projects developed, demonstrated by role, frequency, clarity, and sign (pos/neg) in case-maps. Within these 'hierarchies', some values were more dominant and therefore interpreted as higher-priority. Active and dominant values normally were interpreted as the principal drivers of their decisions, whereas some values were inactive in those decisions and considered 'deactivated' rather than changed. Hence, hierarchies were useful to

show which values were active, dominant, lower-priority, deactivated, or dormant. ES2-ES3 also showed fluctuations, variations, shifts which were attributed to values hierarchies' dynamic recalibration in context responding to varyingly-compatible framed decision-problems. Whilst there may have been other values that the values-holder intended or perceived were present or wished to enact, only those values that architects retold were the ones they considered 'in action' which then informed their framing in context—an important distinction discussed further in §5.3.3.

Table 100 Key themes in values hierarchies (VH)

Key VH themes	Description
Values priming and activation or deactivation/ suppression via frames	Values can be primed and/or activated or deactivated/suppressed via other's frames through their values-based meaning through listener reaction or response to speaker's frames providing evidence of a value's initial or partial presence or shift towards the primed value (identified in the maps in the bottom row Relational Analysis), later evidenced in full through subsequent decision-frames.
VH Properties as active, dominant, lower-priority, deactivated, or dormant values.	Values hierarchies have properties usefully identified as being comprised of active, dominant, lower-priority, deactivated, or dormant values; shown in the case-maps as columns of architect and client values, higher priority at top, lower at bottom, active values in coloured boxes, deactivated in clear boxes with greyed out text).
VH-Stability	Relative stability of values hierarchies is attributable to values retaining or shifting their priority in context. These shifts manifest as' values priorities and dominance varying over time, but not in content. This indicated that the holder's active and dominant values driving their framing and decision-making were changing priority in response to frames as contextual stimuli. Such shifts in response to others' frames are attributable to the values-based meaning communicated in frames through their various properties like content, timing, phraseology, tone, intention, etc.
VH-Consistency	Internal consistency of values hierarchies is attributable the strength of values priorities in values systems in context. More specifically, sometimes both content and priority of active values in hierarchies shifted over time, attributable to frames' compatibility with values. Highly consistent values hierarchies demonstrated clearly dominant values which consistently drove their decision-making (mapped through lower change frequencies and cross-overs, e.g., AR11-CL6, AR13-CL4; AR16-CL2).
VH Dynamic contextual Recalibration	Relational patterns (case maps, bottom row) show losses or gains in opportunities for meaningful choice through values manifestation in hierarchies and VH recalibration, usefully identified through fluctuations, variations, shifts.
Strongly-held values 'systems'	More specifically, rare cases showed that some values hierarchies remained internally consistent and typically stable. From this it was concluded that individuals' hierarchies with both high consistency and stability had well-established and strongly-held values 'systems' (i.e., the holder's recognisably strong conviction) with clearly dominant values which consistently drove their decision-making as above.

Three new factors were found which also help describe hierarchies. In addition to contextual instantiation in response to frames, in some situations it was found that later values and priorities were primed by earlier frames (noted in case-maps' relational analyses, bottom row). Furthermore, by comparing the content and priority of values within and across units-of-analysis from one case, then across cases, the maps throughout showed how shifting values hierarchies lacked stability whereby values priorities and dominance varied over time, but not in content. This indicated that participants interpreted the clients' active and dominant values driving their decisions were changing priority in response to frames as contextual stimuli.

Initially it was thought that this effect was due to the nature of the wider-scoped 'discussion frame' or type of problem framed based on the project stage/phase, e.g., a briefing-problem, design-problem, or critical challenge. But on further analysis of the patterns of shift and change (shown by the interconnecting lines), it was found that regardless of the broader discussion frame, most values hierarchies shifted in context. It was thus concluded that this effect (i.e., values shifting content and priority in context) could be attributed to the values-based meaning communicated in frames through its various properties like content, timing, phraseology, tone, intention, etc. More specifically, when speaker's frames communicated meaning that reflected, responded to, or resonated with listener's values, their values priorities shifted and their framed decisions reflected those revised priorities with the dominant values clearly evident as motivators, lower values priorities less so, and suppressed values not evident. This clearly shows that frames can influence values' manifestation and priority to motivate decisions favouring or compatible with dominant values, thus supporting and extending earlier findings from ES3-SS1.

Some shifting values hierarchies lacked internal consistency, whereby both content and priority of active values hierarchies shifted over time, attributable to

frames' compatibility with values, based on the analysis as above. However, rare cases showed that some values hierarchies remained internally consistent and generally stable. From this it was concluded that individuals' hierarchies with both high consistency and stability had well-established and strongly-held values 'systems' (i.e., the holder's recognisably strong convictions) with clearly dominant values which consistently drove their decision-making (mapped through lower change frequencies and cross-overs, e.g., AR11-CL6, AR13-CL4; AR16-CL2).

Significantly, both shift-types provided useful signals of clients' potential responses to frames and consistency of decisions over time. The relative stability and internal consistency of hierarchies was attributed to client's responses to problem- and challenge-frames and affected what and how several participants subsequently framed sustainability. Some participants detected and responded to these signals, which suggests that clients' values and any hierarchy shifts may be useful predictors of frame receptivity and decision consistency. Stable, consistent hierarchies would be easier to predict potential responses and decisions, somewhat less so when unstable but internally consistent. Whereas architects interpreting unstable and inconsistent priorities showed no evidence of understanding how their clients may respond to decision problem-frames, as evidenced in frames' compatibility with the values manifest in client decision-frames. Importantly, some participants recognised and responded to these values shifts and changes, suggesting they could form new success factors for effective values-framing.

However, whilst values hierarchies manifested in context and showed trade-offs and shifts over time, it must be noted that both architect's and client's values 'systems' (i.e., at higher-level) seemed to remain relatively stable across the series of discussions. It was values' manifestation and priority within contextually-relevant values hierarchies and thus influence on problem/decision frames which shifted or deactivated within values systems, not changed. This is consistent with

research on Schwartz values theory (§2.3, §6.3). Taken together, the findings show values were clearly significant to sustainability decisions because values' content manifested individual meaningfulness, values' structure manifested individual values-based priorities, and values' effects motivated framing and deciding meaningfully. Thus, knowing values content, structure, and effects is helpful because sustainability decisions were based on dominant values, therefore problem-framers can identify and recalibrate sustainability frames using language more compatible with prioritised values for more favourable decisions. This supports and extends earlier findings from ES3 and SS1, and informs further examination of values-and-frames interactions and effects in the last two study-parts, §5.3.3-5.3.4 below.

5.3.2.5 Reflection on values recognition in context

This adds to the previous findings from parts ES2a-ES2b and ES3a-ES3b with new findings on five success factors of accurate values interpretations in context. Because values dominance in hierarchies manifests in response to contextual framing, and values motivated decisions based on dominance, recognising values hierarchies is clearly significant to contextual framing of sustainability with values-based language. Thus, when detected, values priming and values hierarchies' stability and consistency contributed as important success factors to architects' framing and predicting clients' likely responses.

Table 101 Key emergent factors, part SS2a

#	Emergent factor	Description and treatment
28	Values and their *dominance* and *priorities* manifest in contextually-recalibrating hierarchies in response to frames	Interpretations of client values showed hierarchical structure interpreted in priorities, which dynamically readjust and shift priority and characteristics/ content in context based on newly framed decision-problems and critical challenges. Values-framing is further examined in SS2b/§5.3.3, with values-frame effects and strategies examined in SS2c/§5.3.4.
29	Five factors of accurate values interpretations	Five key themes contributing to architects' accurate values interpretations of their client's values were identified. These provide new detail on the characteristics of values expression and manifestation through framing in decision-making processes Key aspects examined as above.

These findings showed the importance of interpreting client's initial and interim decision-frames because architects interpreted that clients communicated their values, whether remaining stable, or shifting in priority or quality. This was critical to understanding how architects then framed sustainability, thereby expanding or contracting the space available for meaningful choices. In future, new values 'content' could add to the knowledgebase of values-types.

It would be useful to identify how participants typically utilise their clients' values information, priorities, properties, and dynamics to frame sustainability messages to elicit more enduring decisions favouring sustainability. This is examined in part SS2b below.

5.3.3 SS2b Success factors in values-framing: Architect's framing to values

Having identified several key factors of values recognition in SS2a (as **A**, SEQ2b below), this second part examines success factors of effective sustainability frames based on values-and-frames relationships, as **B** below. To know more about how frames create or constrain opportunities to create spaces for more meaningful choice (henceforth simplified as 'opportunities for meaningful choice'), the purpose of this study was to understand any key factors of framing to client values, i.e., values-framing, in the twenty architect-client cases from Group-3 which may help practitioners to construct better messages through more values-compatible frames. This then informs the third part on frame effects and framing strategies (SS2c as **C**). Highlights of the key findings follow below, with further detail provided in Appendix-5.

$$SEQ2b: \underbrace{[\![(V_{Speaker}) \rightarrow \underbrace{[F_{Speaker}]]\!] \rightarrow [\![(V_{Decisionmaker})}_{A} \rightarrow [F_{Decisionmaker}]]\!]}_{B} \; \downarrow \cdots}_{C}$$

5.3.3.1 Key findings on success factors in Values-framing

Examining the relational and construct analysis in twenty case maps from Group-3 revealed seven key themes which affected participants' Values-Framing, Table 102, with those starred* examined below and non-starred having been examined previously above.

Table 102 Key themes of values-framing success factors

Key themes	Description
CL Context Familiarity	The familiarity of clients with the context of architecture and construction typically informed how participants began probing for values, boundary-seeing, and then values-framing, which sometimes led to values-neutral open-ended frames of varying success.
Previous Priming	Typically negative, Previous Priming from frames typically downgraded sustainability by setting the stage for future reductions with values-frames that primed dormant values or shifted the quality of active values away from supporting sustainability.
***Frame Receptivity**	Clients' willingness or readiness to listen to participants' frames and then respond with an open-mind, further described in §5.3.3.2. (Frame Receptivity is about the evidence found which describes how open or receptive the client is to frames and frame effects).
***Frame Accuracy**	The success or accuracy of participants' sustainability frames connecting with clients' values was found with six characteristics or success factors, described further in §5.3.3.3
***Framing Approach**	How ARs introduce and frame sustainability to values for decisions favouring SD (VFR), with several values-framing techniques found and further described in §5.3.3.4 and §5.3.4.2
VH Properties	Several properties of clients' values hierarchies contributed to effective values-framing including clients' values hierarchies' Consistency and Stability addressed above in §5.3.2.4.
***VFR→DM-Outcome Consistency**	Some case maps showed how accurate values-framing (VFR) over time contributed to the consistency of clients' decision-outcomes, to which the previous factors all contributed. This aspect is examined further in §5.3.4 because consistent client responses also helped participants consistently create opportunities for more meaningful choices about sustainability.

5.3.3.2 Receptivity informs Values-framing

One of the most significant preliminary signals was client's receptivity to framed ideas and proposals (i.e., client's frame-receptivity). Several participants referred directly to the phenomenon of clients' receptivity to ideas proposed through problem-frames as being an important factor in communicating sustainability for decision-making. This prompted a return to the data for any further evidence,

where other examples were found. Frame receptivity was identified by three predominantly sequential factors, outlined in Table 103.

Table 103 Key themes in Frame receptivity

Factors	Description
Receptivity to Architectural/ Design Creativity	Several cases showed participants first introducing architectural design ideas, creative responses to briefs and sites *first* before introducing sustainability to 'test the water', gauge a reaction to initial ideas, and draw out values to then frame sustainability in more individually-meaningful ways.
Receptivity to 'raw' sustainability concepts in values-neutral open-ended frames (VN-OEF)	Some sustainability concepts were posed to more experienced clients as values-neutral open-ended frames in the form of three simple questions posed at different times: 'what do you want to do about X…?' Such issues were typically about e.g., progressing the design in terms of, A) thermal performance B) renewables, C) MEP heating & ventilation systems, D) structural frame/thermal mass, etc. In each, clients were left to decide based on their own experience and values without the architects' prior suggestion, proposal, or recommendation.
Receptivity to contextual, values-framed sustainability concepts/options	When a speakers' values-frames appealed to clients and their values and they reacted in response, the effects were POS or NEG in terms of a relative increase or decrease in sustainability and its measures, whether tangible or intangible.

Receptivity typically involved, first, introducing architectural/design creativity; then some participants introduced 'raw' concepts to experienced clients in simple, values-neutral open-ended frames (VN-OEF), e.g., 'what do you want to do about e.g., renewables'; then, having 'tested the water' participants introduced values-framed sustainability concepts and options. All three suggest sub-themes of a broader receptivity to values-frames. Participants identified client's receptivity through these sequential frames leading from design to sustainability, with which they detected and responded to client's frame receptivity. This suggested that participants were naturally seeking out boundaries to choice-space through frames-to-values connections for decisions favouring sustainability.

Receptivity indicated client openness to framed sustainability messages; considering any critical success factors in frames-to-values connections can provide a useful window into links between values and decisions. Taken together, these characteristics marked the first important stage of creating space for meaningful choice: boundary-seeking via receptivity to values-framing.

5.3.3.3 Values-framing accuracy

The second theme concerned how architects identified effective or accurate values-framing (VFR), albeit frequently underappreciating they were detecting values-framing accuracy. This manifested with six linked characteristics, shown in Table 104.

Table 104 Six key factors of values-framing

Factor	Description
Client values Clarity	How clear clients' values were to participants, promoted by the factors identified above including AR+CL Values Compatibility
Values-framing Accuracy	How accurately architects framed sustainability to appeal to or link with those values through values-compatible frames, which promoted values-framing receptivity
Values-frame Compatibility	How compatible values-frames were to the client values identified.
Values-framing Receptivity	How receptive clients were to framed sustainability options.
Values-framing Consistency	How consistently architects could maintain values-to-frames connectivity.
Values-Reframing	Creatively working with values to generate new ways of seeing sustainability as values-compatible and therefore more individually-meaningful.

Values' clarity and values-frame receptivity here continue from initial stages of values-framing when architects formed and employed values interpretations to begin boundary-sensing of available choice-space. Such initial choice-space was explored and expanded or constrained depending on the above factors of: 1) how clear clients' values were to participants, 2) how accurately architects framed sustainability to appeal to or link with those values, which promoted, 3) how receptive clients were to framed sustainability options, and 4) how consistently architects could maintain values-to-frames connectivity, thereby looping back to 1) client values clarity.

Importantly, this values-clarity draws on the factors and skills defined in SS2a on architects understanding their client's values, but also creatively working with values to generate new ways of seeing sustainability as values-compatible and therefore more individually-meaningful. This Values-Reframing indicated that when some participants detected their clients were unreceptive to such values-

frames, they would actively reframe to and around client boundaries. Through reframing to emergent or shifted values, some participants would recalibrate choice-space by being sensitive to changes in their client's prioritised values, and reframing sustainability appropriately.

Creating values-compatible frames was identified through four key factors of values-framing: values-frame receptivity, values-frame compatibility (e.g., through techniques like creating 'lines-of-argument', or 'direct appeals to values', described below), values-framing accuracy, and values-reframing to account for inaccuracies or shifts from newly framed decision-problems, e.g., critical challenges. Boundaries to choice-space were almost always encountered when architects framed sustainability options that were incompatible with client values, thereby resulting in unfavourable decisions.

Thus, (V)-Clarity and (V)-Compatibility permitted [VFR]-Accuracy which promoted [VFR]-Receptivity, thus promoting [VFR]-Consistency. This quadripartite of values-framing clarity—accuracy—receptivity—consistency is a newly-identified key factor, with two further characteristics extending receptivity factors. They marked the second important stage of creating opportunities for meaningful choice: through exploring and expanding choice-space via values-framing accuracy.

5.3.3.4 Techniques of architect's Values-framing

Several key factors emerged from Group-3 about how participants formulated sustainability frames to connect with client values which provide useful guides to values-framing techniques as helpful success factors in Table 105. Six techniques are shown with which participants made opportunities for client's individually-meaningful choices.

These begin to suggest that some architects used boundary-seeking and values-framing techniques as rules-of-thumb heuristics in helping clients to reach

decisions about sustainability which this research has shown can be more individually-meaningful. This also reinforces the importance of architects initially establishing client values and boundary-seeking through values-frame receptivity. These factors also echo earlier findings that architects seemed to approach framing sustainability in ways that related to their own values. This concept of framing approaches suggests patterns operating at a higher-level of analysis, and are further examined in Study SS2c, §5.3.4 below.

Table 105 Six values-framing techniques

Technique	Description
Values-Framing/Reframing	Framing sustainability in values terms to elicit values-based decisions, and then reframing sustainability in terms of emergent and dominant values.
Issue playback	Reframing sustainability solutions in terms of known issues that the decision-makers themselves consider are important and worthwhile to resolve.
Active reflection-in-context	Reflecting on listener-decisionmakers' *values in context* and *frames' effects in action*—i.e., during actual discussions affecting sustainability.
Values-based lines-of-argument	Values-framing by creating lines-of-argument that link framed sustainability options to values. Creating conceptual links from sustainability to values as choice rationales, e.g. 'If you increase your sustainability credentials, your chances of planning may be better' (AR15).
Direct appeals to values	Values-framing by making direct appeals to values through linking framed sustainability options to interpreted values. Hence, sustainability was framed as a matter of individual values, e.g., 'sustainability is the ethical thing to do' (because ethical behaviour was valued), or 'sustainability is a marketable asset' (because marketing was a valued route to increase profit).
Negotiating compromises via reframing to values	Conferring to reach an agreement on sustainability issues which were potentially unfavourable to or challenging dominant values by suggesting values-based concessions to protect valued aspects, features, or measures, such as removing wind turbines to satisfy planning objections, but increase PV's and save the many other sustainability measures, or simply saving money.

One further characteristic was identified as a preliminary finding that some clusters of participants' values suggested a propensity to Values-Frame sustainability, potentially indicating a predictive component. In future, new research could examine this relationship of individual values with evidence of values-framing frequency and success.

5.3.3.5 Reflection on Values-framing accuracy

This part examined three emergent factors (Table 106) from Group-3 cases and found three sets of useful success factors in participants' effective sustainability frames. Receptivity to creativity and then initial sustainability frames helped inform participants' values-framing. Five success factors contributed to values-framing accuracy, with six techniques found as useful guides, thus adding new facets to the previous findings. Together this supports the view that framing values-based choice options could be critical to establishing the choice-space and choice boundaries for clients and decision-making stakeholders.

Understanding more about 'values-framing' and frames-to-values connections from design- and sustainability-orientated practitioners can help architects to construct better messages through values-compatible frames. This may therefore help others to create opportunities for more meaningful choice, examined in the final part SS2c below.

Table 106 Key emergent factors, part SS2b

#	Emergent factor	Description and treatment
30	Receptivity informs AR Values-Framing	Three key themes in Frame Receptivity: Receptivity to Creativity; Raw sustainability VN-OEF; and Values-framed sustainability.
31	Six key factors of AR Values-Framing	Clarity; Accuracy; Compatibility; Receptivity; Consistency; Reframing; Frame effects are further examined in SS2c/§5.3.4.
32	Key Values-Framing techniques	Key Values-Framing techniques emerged SUCH as Making direct appeals to values; and creating lines-of-argument. Values-Framing techniques are further examined in SS2c/§5.3.4.

5.3.4 SS2c Frame effects on decisions via values as strategic 'framing approaches'

This final larger study-part covers findings on twenty design/sustainability-orientated cases regarding the effects of frame options on decisions via values and any evidence of confirmatory, contradictory, or new emergent factors from Group-

3, or B in SEQ2b. Moreover, having first emerged in the Pilot Study, an important strategic factor was also found on what are best described as 'framing approaches', or C in SEQ2b, described in §5.3.4.2. Guiding questions and purposes of this part are outlined below in Table 107. Highlights of the main findings follow below, with additional detail in Appendix-5.

$$SEQ2b: \underbrace{[\![(V_{Speaker}) \rightarrow [F_{Speaker}]]\!] \rightarrow [\![(V_{Decisionmaker}) \rightarrow [F_{Decisionmaker}\ ]]\!]\ \downarrow \cdots}_{\mathbf{C}}$$

Table 107 SS2c Guiding question and purposes

Category	#	Element
GUIDING QUESTIONS	Q1	What are the effects of frame options on decisions via values from Group-3? What evidence do they offer of confirmatory or contradictory factors to earlier findings, or emergent factors?
	Q2	What transferrable findings does this reveal at a higher analysis-level than serialised individual discussions?
PURPOSES	P1	To refute, confirm, or extend previous findings with more systematic studies of a wider range of architect-client cases and sustainability decision-making discussions
	P2	To move beyond frames that work individually and find how architects approached clients and their projects from the perspective of architect's overarching approaches to framing sustainability over time.
	P3	To identify and record any emergent factors for further examination or future research.

5.3.4.1 Frame effects: Confirmatory, contradictory, or emergent factors

A Construct Framework distilled from case-maps outlined the main patterns and relations between client values clusters, frames' effects, decision triggers, and values drivers, shown in Appendix-5.2, with a representative extract in Table 109 below. Seventeen of twenty cases showed that decision triggers were clearly the framed decision-problems, with framed client decisions clearly being driven by a small cluster of dominant values in each decision, across cases. This confirmed the preliminary findings from ES2, structured findings from ES3, and systematic findings from SS1. However, the Construct Framework showed that many direct triggers of sustainability decisions were clients' *dominant* values as drivers,

confirming what the maps showed: values' roles as direct decision triggers, and frames' roles as direct triggers of values (i.e., triggering decisions via values). The three remaining cases showed that those clients had stable and consistent values hierarchies which drove their decisions, potentially making them less susceptible to frame effects. Participants clearly expressed their interpretations of these functions alongside values hierarchy shifts. This shows that these participants could identify their client's values and hierarchies, recognise variations, and successfully respond with values-based frames, thus confirming earlier findings. Ineffective responses ensued either when values shifts were not recognised, or when values-frames were compatible with lower priority or newly suppressed values. Taken together, this reinforces the primacy of clients' dominant values (SS2a) and newly establishes the strong significance of architects eliciting, accurately interpreting, and effectively 'framing to' those values in priority order with values-based frames to create opportunities for more individually-meaningful choices.

To better understand process-level patterns of values-and-frames interactions and effects, it was thought that frame effects could newly be explained by patterns in any higher values orders, such as terminal/instrumental (Rokeach), self-protection vs. growth, or conservation vs. openness (Schwartz). It was expected that terminal, self-transcending values may be primary drivers of favourable sustainability decision-making at one end of a spectrum, and that instrumental, self-enhancing values could be drivers of unfavourable decisions on the other. Findings from the Construct Framework (see sample, Table 109) showed that, in these architectural projects, values could be characterised according to both Rokeach and Schwartz systems, and that the found values behaved in ways that were congruent with both classifications. This suggests that both terminal and instrumental values operate in framing and deciding about architectural sustainability, and that that expressions of terminal values functioning as drivers

in sustainability decision-making did not suppress the presence or negate the effect of instrumental values in client's values hierarchies, and vice versa.

However, whilst client values were interpreted variously as drivers and activators or barriers and suppressors of decisions varyingly favourable to sustainability, no further useful connection could be made between the patterns found in frames' effects, and Rokeach/Schwartz values classifications. This was because the content and manifestation of values and their priorities varied between individuals, in response to framed decision-problems, and between project stages. As previously introduced, this reinforces that values in architectural projects are contextual manifestations of values in systems, whereby it is values systems which conform to theories of more universal values at the cultural and cross-cultural analysis level. Taken together, these points confirm that the most useful and repeatedly predominant pattern was how values-compatible frames triggered values' manifestation and prioritisation in context (for both architect and client) to reveal clients' decisions were driven by dominant values. This reinforces the importance of vigilant values-recognition and values-framing. It was thus concluded that the order- and class-level distinctions of existing systems-level values classifications were not helpful to distinguish frame effects on decisions via values at the analysis level of fundamental processes. Systems-level values classifications may be helpful with a statistically-representative sample, but beyond the current study scope.

The main useful patterns found in the Construct Framework were transposed into several Frame Effects Tables (see sample, Table 110 below), which demonstrate patterns of client values clusters, frame types, participants' frames types, frame contents, and positive and negative frame effects, both earlier and later in projects. The main patterns comprise five types of frame effects on decisions via values in twenty cases, summarised in Table 108 below. The complete Frame Effects Tables are shown in Appendix-5.3.

Table 108 Types of frame effects on decisions via values in twenty cases

Phase	Effects type	Section
Initial and interim	Positive effects for increased sustainability (see sample in Table 110 & Appendix-5.3)	First below
	Negative effects for decreased sustainability (see Appendix-5.3).	
Critical challenges	Effective critical-challenge management through framing to retain, protect, enhance sustainability (see Appendix-5.3).	Second below
	Ineffective critical-challenge management through framing, resulting in sustainability loss (see Appendix-5.3).	
	Nil effects through framing challenges (see Appendix-5.3).	

The case-maps, Construct Framework, and Frame Effects Tables confirm the findings from ES3 and SS1 with predictable variations in the quality and content of both values and frames associated with the shift from commercial- to design- and sustainability-orientated participants. Findings on any confirmatory factors and any exceptions are highlighted below, followed by any emergent factors.

Table 109 (below) Construct framework, representative extract from two cases with Group-G3 participant AR14 (see Appendix-5.2 for all pages)

Table 110 (below) Example Frame Effects Table (See Appendix-5.3 for all pages)

Appendix 5.3 SS2 V-F-DM Construct Framework distilled from case-maps

v3

VARIABLES – SEQUENCING – EFFECTS				ANALYSIS		
IN THIS PHASE	FOR THESE CLIENT VALUES (V-CL) BASIC VALUE STATEMENT CLUSTER	THESE FRAMES (F-AR, F-CON…) FRAMES	HAD THESE EFFECTS ON D-M (via F-CL) OUTCOME: Green good for SD; Red bad for SD	DECISION TRIGGERS Act that sets in motion some course of events	VALUES DRIVERS WHICH VALUES are DRIVERS> SD++ OR SD--	PATTS+RELS
	Values below:	Are TRIGGERED or ACTIVATED by Frames below:	To MOTIVATE the Decision-Outcomes below:		<< Relational analysis structure	ACCURACY
AR14						**43%**
AR14-CF-CL2					50.0%	2 / 2
F-AR-Dir	TV-ST+CONS+OTC: Sustainability's Environmental Benefits; Environmental Sustainability IV-SE for TV-CONS+SE: Best Value Performance + Energy Efficiency IV-SE for TV-SE+CONS: Personal/Family Gain (new house)	SD GOALS + OBJECTIVES: *Long-term Energy Efficiency, passive design*	Elicits AGREEMENT, INSTRUCTION to proceed; Primes VFM	F-AR: Meeting CL objectives	TV-ST for TV-SE+CONS >> SD++	As private real client VCL TV-ST decline, IV-SE increases and SD decreases; cost prevails later.
F-AR-DMI	IV-SE for TV-CONS+SE: Intelligent Spending / VFM (COST) TV-ST+CONS+OTC: SUST+ENV; IV-SE for TV-SE+CONS: Personal/Family Gain (new house)	COST OF SD MEASURES: *LCC+Building Performance V. CAPEX+Cost*	Elicits BALANCED AGREEMENT, INSTRUCTION in favour of MED-HIGH SD-Passive	F-AR: LCC-CAPEX performance v. cost spectrum	TV-ST for TV-SE+CONS_£ >> SD+	
F-AR-DMI	IV-SE for TV-CONS+SE: Intelligent, Balanced Spending / VFM; IV-SE for TV-CONS+SE: Balancing Agendas / Demands; TV-CONS+SE: Value-for-money; IV-SE for TV-SE+CONS: Personal/Family Gain (new house)	*DETAILING; ref ARs HARD WORK / EFFORT re: Façade, Beautiful long bricks*	Elicits AGREEMENT, INSTRUCTION to Maintain design intent; Elicits JUSTIFICATION, to balance costs and INSTRUCTION to dismiss AR during construction.	***F-AR: Expensive detailing***	IV-SE+CONS & TV-SE+CONS_££ >> SD-	
F-CON-CC	IV-SE for TV-CONS+SE: Intelligent, Balanced Spending / VFM; IV-SE for TV-CONS+SE: Balancing Costs & Agendas/Demand TV-CONS+SE: Value-for-money; IV-SE for TV-SE+CONS: Personal/Family Gain (new house)	COST SAVINGS: *We can do bricks cheaper…; You don't need that much insulation…*	Elicits AGREEMENT and significant CONCESSIONS AGAINST SD	F-CON: Cost savings	IV-SE+CONS & TV-SE+CONS_££ >> SD-- Balancing Costs & Agendas/Demand; Value-for-money	
AR14-CF-CL3					60.0%	2 / 1 / 3
F-AR-Dir	IV-SE for TV-SE-CONS: Simplicity for Cost-effectiveness + IV-SE for TV-SE: Site Maximisation (for added value / profit) TV-SE with TV-ST: Profit (with Added Value)	OBJECTIVES TO FULFIL CL GOALS: *'Good Quality & Higher Standards to get planning'* SDDM TACTICS, INTRO IDEAS: *introducing SD ideas re: GWR*	Elicits REJECTION; a step too far; locates BOUNDARY; ACTIVATES VCL: SIMPLICITY for Cost-effectiveness	F-AR: BOUNDARY-FRAMING greywater recycling	IV-SE for TV-SE-CONS_£ >> SD- SIMPLICITY	As semi-enlightened private housing developer, TV-ST bring some SD benefits; PROFIT still prevails.
F-AR-DMI	TV-ST+SE-UNIV: Landscape AND Conservation + TV-ST for IV-SE: Good Quality/Added Value IV-SE for TV-SE-CONS: Experience-based decision-making	DESIGN APPROACH: *'Environmental Design preface to PROGRESSING THE DESIGN, Storage Location / Appearance: Site Aesthetics' negative impact*	Elicits significant CONCESSIONS in favour of SD; retaining landscape	F-AR: TV-ST fr: environmental aesthetics	TV-ST+SE-UNIV >> SD+ Landscape+Conservation	
F-AR-DMI	IV-SE for TV-SE-CONS: Experience-based decision-making IV-SE for TV-SE: Site Maximisation (for added value / profit) TV-SE with TV-ST: Profit (with Added Value)	VN-OSF DESIGN-DEV / PROGRESS: Renewables	Elicits Cautious Openminded AGREEMENT; Volunteered rooftop PV solution	VN-OSF Values-neutral open-ended frames	IV-SE for TV-SE-CONS_£ >> SD+ Experience; added-value	
F-AR-DMI	IV-SE for TV-SE-CONS: Simplicity TV-SE with TV-ST: Profit (with Added Value) IV-SE for TV-SE-CONS: Experience-based decision-making	VN-OSF DESIGN-DEV / PROGRESS: *MEP Heating & Ventilation Systems*	Elicits Volunteered DECISION and JUSTIFICATION: *'Combi-boilers for easy legal separation'*	VN-OSF Values-neutral open-ended frames	TV-SE_£ >> SD- Profit (simplicity)	
F-AR-DMI	IV-SE for TV-SE-CONS: Simplicity IV-SE for TV-SE: Site Maximisation (for added value / profit) TV-SE with TV-ST: Profit (with Added Value) IV-SE for TV-SE-CONS: Experience-based decision-making	VN-OSF DESIGN-DEV / PROGRESS: *Structural Frame / Thermal Mass: 'What do you want to do…?'*	Structural solution (conc. frame) decision on cost (i.e. not appropriateness for 'awkward' site or sustainability)	VN-OSF Values-neutral open-ended frames	TV-SE_£ >> SD- Profit (simplicity)	
F-PC-CC > F-AR-CC	IV-SE for TV-SE-CONS: Simplicity IV-SE for TV-SE-CONS: Experience-based decision-making TV-SE with TV-ST: Profit (with Added Value)	F-PC-CC: OUTCOME IMPROVEMENT: *'Adding more materials for Improved Chances at Planning'* F-AR-CC: (CHALLENGE-FRAMING + EVALUATION // JUDGEMENT: *"Overexcited Planning Consultant (PC) who thinks he's a designer"; "There's a limit…"*; RECOMMENDATION to maintain *'Simple well-detailed (design strategy)'* JUSTIFICATION: *'Cheaper, more sustainable, less waste…'*	Elicits AGREEMENT, INSTRUCTION to Maintain design intent & simplicity; Elicits JUSTIFICATION, for Cost-Effectiveness	***F-PC: Adding more materials (i.e. lacks simplicity, costs more)***	TV-SE_£ >> SD- Profit (simplicity)	

POSITIVE EFFECTS for increased sustainability

From least committed/interested to most committed/interested

FOR THESE CLIENT VALUES (V-CL)	THESE FRAME TYPES (Ft-AR)	THESE FRAMES INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
▪ **Fulfilling Statutory Requirements** ▪ **Providing Welcoming Estates**	*AR Framing Approach*	*Appeals to responsibility and conformity*	"...we just want to meet the regulations. Do the littlest amount to make sure we pass."
	CL LOWER BOUNDARY	Recognise statutory responsibilities	
	Responsibility and Justifications to retain SD measures	"There were different regulations for energy efficiency [for the different use types]..."	
		"Green roof is a planning requirement"	Kept the green roof
		"You need to have PV's... because you've got a new building which needs to meet the building regulations; you have to meet them."	Kept the PV's, and the east glazed wall.
		"We'll [need to] report on alternative forms of energy, you have to meet a certain level of u-values and the energy used in the building."	
▪ **Maximised land value** ▪ **Return-on-Investment (ROI)** ▪ **Profit**	*AR Framing Approach*	*Principles-Strategy-Measures* *'Making appeals to the pocket'* *'Dangle a carrot'*	"it's just purely a business arrangement; maximum profit, maximum land value"
	CL LOWER BOUNDARY	Profit via Maximised land value	
	Add value, Increase profit	'Dangle a carrot; if you up your sustainability credentials, your chances of planning might be better'	GAIN-RELATED RECEPTIVITY: 'Three previous applications for the site had been turned down; Receptive to any ideas that would get a consent'
	Improvements, Benefits, Gain	'Achieve better than building regs'	INSTRUCTION + PRIOR JUSTIFICATION: 'Do whatever's necessary to achieve a consent'
		'Promising code level improvements'	
		'Demonstrate exemplary design to mitigate three failed applications'	
	Capitalising on obvious contextual features	'Ideal site for orientation' 'Great south-facing views'	
	Passive design measures	'Orientation, South-facing lounge windows, Large balconies'	
	CL UPPER BOUNDARY	Financial return	'No financial return, no roof terraces'
▪ **Saving money** ▪ **Buying green for personal tax benefits** ▪ **Good design**	*AR Framing Approach*	*Ask questions early*	AGREEMENT, INSTRUCTION: 'Great, I want glass everywhere'
	CL LOWER BOUNDARY	Must have the views (Self-enjoyment)	
	Design concept solutions	'Sliding glass wall; floating glass corner' ... 'but with high thermal mass and insulation to offset the glazing'	
	Cost effective solutions	'Fit LEDs throughout the property, you're going to save yourself an absolute fortune because of the [low power consumption] of an LED.'	AGREEMENT, INSTRUCTION: 'OK, let's do the LEDs and the HE boiler too.'
		'Fit a decent [HE] boiler. Suddenly your energy performance SAP calcs are going to go through the roof; there's ways of being clever and not breaking the bank.'	

Frame effects: Confirmatory factors and exceptions

An analysis of case-maps (Appendix-5.1), Construct Framework (Appendix-5.2), and Frame Effects Tables (Appendix-5.3) revealed that no differences, contradictions, or exceptions were found at the process-level compared to maps and findings from previous stages of the study. Whilst the content and context of framing in decision-making were self-evidently different between cases, the principles of their interactions and effects remained stable. It thus was found that earlier findings and principles were confirmed by the twenty cases in this study with some useful extensions, shown as confirmatory factors and descriptions in Table 111. Some exceptions were found and are indicated as new emergent factors in Table 112 and below.

Table 111 Earlier findings confirmed and/or extended with SS2c confirmatory factors and descriptions

Confirmatory factor	Description/Finding
Stakeholders	Choice boundaries remain inherent in stakeholder's roles, as Study-part ES3a.
	Participating architectural professionals' frames created implied, tacit boundaries, as Study-part ES3a.
Values recognition	Participants were already seeking and recognising values—and values via frames, because it mattered to their framing and clients subsequent framed decisions, as Studies ES1-SS1.
	(V_{CL})-Recognition = Opportunity predict and modify client decision-making, as SS1
	Five factors of accurate values interpretations, as Study-part SS2a.
	Participants interpretations of their client values. These interpretations continued to provide valid and reliable sources of values data which were in fact more important for their framing, precisely because participants formulated and framed sustainability options based on their interpretations of clients' needs, values, and their priorities and not what clients thought their values were, as Studies ES3-SS1.
Effects on framing	Six key themes of values influences on architect's initial framing interactions, as Study-part ES2b.
	AR+CL values compatibility, as ES3b
Frames and effects	Decision-makers responded to framed decision-problems when making decisions, whereby decision-problems framed compatibly with their values typically elicited favourable decisions, as ES1-SS1.
	Participants' frames created implied and tacit boundaries, as ES3a.
	Trigger frames, found in both Critical Challenges and earlier design problem-framing as ES2c
	Critical challenge frames recalibrate 'values landscapes' as values expression (values e.g., activation, suppression, shift) and priorities in context.
	Two key factors: F1: Decision-making is values-expressive behaviour.
	F2: Decision frames manifested and expressed the values associated with the decision.

(Continued below)

Table 111 (cont.) Earlier findings confirmed and/or extended with SS2c confirmatory factors

Confirmatory factor	Description/Finding
Values and effects	Values-based boundaries of client interest, tolerance, as ES1-SS1
	Values and their priorities manifest in contextually-recalibrating hierarchies in response to frames as MA2-SS1.
	Values influences formed pathways via frames between participants and clients as MA2-SS1.
Sequencing matters	Values influenced frames, Frames influenced values, Values influenced decisions communicated in frames in sequences of influence from problem-framer to decision-maker, as ES3-SS1.
	Influence sequences repeated serially over time, as ES3-SS1.
	The base influence sequence of values-influencing-frames-which-influence-values was the same for both participants and their interpretations of clients' values, frame responses, and framed decisions, as ES3-SS1.
Values-and-Frames interactions	Composite values-and-frames lens remained useful to study and understand influences in deciding about sustainability over time, as ES2-SS1.
	Frames-to-Values compatibility; Values-compatible frames, as ES3b-ES3c & SS1
	Values-framing and values-frames, initially as ES1, and later in ES2-SS1.
	Principles of values-and-frames relationships captured by four key underpinning factors, initially as ES3b, and later in ES3c (and supported by SS1 findings).
	Decision formation, shift, and change, as ES3-SS1.
Values-framing and values-frames	VFR-Receptivity informs AR Values-Framing, initially as ES2a-ES2b, then again in ES3b-ES3c (and supported by SS1 findings).
	Key factors of AR Values-Framing, extending ES2-ES3 (and supported by SS1 findings).
	Key Values-Framing techniques, extending ES2-ES3 (and supported by SS1 findings).
Values-Framing approaches	Broad approaches were found to relate with participants architectural approaches as ES1, with new emergent factors outlined below in Table 112.

Hence, because SS2 was undertaken to confirm, contradict, or revise findings from previous studies, and because studies ES3 and SS1 included complete worked examples including decision-making 'discussion content' and their effects, details of new 'content' are not included with this study (but included in Appendices 5.2-5.4). Taken together, this study of frame effects on decisions via values confirms the previous findings, underpinning factors, and principles of frames' effects on decisions via values with twenty new cases from different participants and client-projects, with new emergent factors highlighted below.

Frame effects: New emergent factors

Of the new emergent factors and associated findings shown in Table 112, the latter on values-framing approaches link to and extend similar preliminary findings, with values-and-frames maintenance potentially being related. Because these factors suggest broader-scoped strategies potentially at higher levels-of-analysis, they are first examined below before the study is concluded.

Table 112 New emergent factors from SS2c and associated findings

#	Emergent factor	Description
33	Evolving sequences	Patterns of framing sustainability options were not simply dyadic frames-values connections and transactional, but sequential, evolving, and frequently guided by participants' overarching ideas about how to approach and conduct their framing interactions, as Emergent Factor 34.
34	Framing approaches represent communication strategies for managing evolving interactions	Patterns in the ways that architects set up their framing sequences and handled the evolving design problem-solution are best described as framing approaches, further examined in §5.3.4.2 below. Three key relationships; (V_{CL}) Interpretations, [VFR] Values-Framing, and Framing Approaches can be considered as heuristics used to provide architects with experience-based clues of previous and current potential frame effects on decisions via values. Framing approaches are heuristics about architects managing evolving interaction sequences which contribute to design problem-solution co-evolution, as §5.3.4.2 below.
35	Values-and-frames 'maintenance'	Lack of values-and-frames maintenance likely contributed to missed opportunities for more meaningful choices, which was mitigated when participants utilised effective framing approaches, as below.

5.3.4.2 Key findings on strategic framing approaches

When working through the above case analyses, several interesting features emerged from participants evidence and captured in the Frame Effects Tables (Table 110 and Appendix-5.3). Broader patterns of framing sustainability options were not simply dyadic frames-values connections and transactional, but sequential, evolving, and frequently guided by participants' overarching ideas about conducting their framing interactions. Preliminary exploratory findings identified such broader-scoped patterns of architects' approaches to sustainability framing at a higher level-of-analysis. In this study, patterns were detected in the ways that participants typically conducted or approached framing sustainability with clients in projects by types. These patterns showed how participants set up their interactions and framing sequences, then handled the evolving discussions.

Most importantly, analysis showed that the participants who had clear strategies for framing interactions were more effective at creating space for more meaningful choice and framing sustainability in more individually-meaningful ways. However, all participants but two did so unknowingly. Thus, to move beyond serialised sequences and focus on findings and applications more useful in practice, participants' framing practices were examined for 'framing approaches' in the twenty cases. Such approaches may provide an 'umbrella heuristic' describing values-framing strategies. This would help practitioners by providing useful heuristics for broader, longitudinal successes and application. It provides a new viewpoint on frame effects on values and adds further support and significance to the previous studies. Findings at this higher analysis-level are important to link effective framing approaches with creating opportunities for meaningful choices. Key factors of framing approach, broad type, and broad results as favourable/unfavourable are shown in the following sections. These provide a broader perspective on values-framing and frame effects to also examine how framing approaches are more effective at eliciting favourable decisions.

Initial and interim values-framing approaches

Of the nine types of framing approaches in Table 113, the first two capture that some participants consciously included listening and asking in their probing approaches to typically favourable effects, supporting earlier findings on values-listening and values-recognition from a broader perspective. Making direct appeals to clients' values was one of the most-used, simplest and most effective strategies, supporting the fundamental findings that values-framing is a useful route to more meaningful and favourable decisions.

Numerous examples of five 'composite' approaches suggest that effectively framing sustainability generally required multi-faceted strategies to address project specifics and individual characteristics. This supports earlier findings on

individualised contextualisation of frames being more effective at achieving favourable decisions. Four composite approaches focusing on design were typically effective at values-framing for favourable decisions. The character of composite design approaches also suggests that these practitioners were adept at framing sustainability to address the numerous facets including Constraints and Implications, Systems and Principles, Alternatives and Justifications. One particularly compelling but simple composite approach was Principles—Strategy—Measures; when combined with probing like Listen—Ask—Propose, such approaches could provide powerful and helpful strategies for meaningfully communicating sustainability.

Table 113 Initial and interim values-framing approaches, Group-G3

Type	Framing Approach	Result
Probing	Ask questions early	Typically Favourable
Composite probing	Listen—Ask—Make appeals to optimise or strike the best balance possible between capital outlay and some sort of benefit	Favourable
	Listen—Playback—Values Activation—Favourable Decision	Favourable
	Listen—Ask—Propose	Favourable
Direct-values approaches	Appeals to responsibility and conformity	Favourable
	Make appeals to their better nature	Favourable
	'Dangle a carrot'	Favourable
	'Making appeals to the pocket'	Favourable
	'Whatever works: Make appeals to their better nature, or their pocket'	Typically Favourable
	Client satisfaction through appropriateness, compliance	Typically Favourable
	Leveraging client willingness and capability to secure SD improvements	Favourable
Composite or Holistic Design	Principles—Strategy—Measures	Favourable
	Design strategy—Recommendations—Implications	Favourable
	Context-specific design responses	Favourable
	Holistic approach, Integral systems	Favourable
	'We are pursuing *fabric energy performance*; whereas the M&E consultant is pursuing *overall energy performance'*	Favourable
	'Innovation requires "pushing the boundaries" and therefore trust and respect'	Favourable
	Leveraging challenging conditions (site and statutory requirements) to secure SD improvements	Favourable
Composite Design: Tangibles + Intangibles	1. Context, Challenges, Constraints + Implications; Design Approach; then Design Concept, then: 2. Principles & Systems discussions, Alternatives & Implications (use patterns, etc.), then: 3. Renewables Evaluation, Justifications, Alternatives	Favourable

(Continued below)

Table 113 (cont.) Initial and interim values-framing approaches, Group-G3

Type	Framing Approach	Result
Composite Design: Tangibles + Intangibles	4. Context, Challenges, Constraints + Implications; Design Approach; then Design Concept, then: 5. Principles & Systems discussions, Alternatives & Implications (use patterns, etc.), then: 6. Renewables Evaluation, Justifications, Alternatives	Favourable
Passive Design	Solar design approach	Favourable
	'Fabric first' approach to maximise sustainability's chances	Favourable
Financial	'Making appeals to the pocket'	Favourable
	Clever spending	Favourable
	Payback periods	Favourable
Composite Financial	Justifications: payback and market debate; market-based financial drivers for buyers	Unfavourable
	Balancing profit, practicalities, risk	Typically Favourable
	Early challenge-framing and Boundary-framing: not afraid to challenge client to 'see how deep their commitment was and how deep their pockets were'	Favourable
Composite Benefit	Explaining SD options in technical terms with benefit frames	Favourable
	Make appeals to optimise or strike the best balance possible between capital outlay and some sort of benefit	Favourable
	Benefits of tangible and practical solutions	Favourable
	Cost-to-benefit	Unfavourable
	SD detail recommendations + cost savings; benefit	Favourable

The only unfavourable earlier initial and interim results were from approaches related to cost/profit/benefit, which is unsurprising and commensurate with previous findings. These findings also support previous findings on the aspirational nature of earlier framing and decision-making which likely impact favourable framing results.

Values-Framing approaches to critical challenges

Later approaches to framing critical challenges shown in Table 114 unsurprisingly resemble some earlier approaches, but lack the aspirational components as expected when later 'project-frames' shifted to problem-solving, thus supporting earlier findings. It was somewhat surprising to find many approaches to values-framing in critical challenges produced favourable decisions. This suggested that the application of values-framing strategy assisted with such results. Similarly, this indicates that the later unfavourable decisions can be attributed to a

combination of low frames-to-values compatibility and the lack of strategy, which suggests that they are mutually inclusive.

Table 114 Later approaches to values-framing critical challenges, Group-G3

Type	Values-Framing Approach	Result
Statutory compliance	Statutory justification and planning restriction; regulations retention	Unfavourable
	Objections + implications/risks	Unfavourable decision, reduce risk
	Planning strategy, planning justifications	Favourable
	Bend the rules	Favourable
Composite	Clarify Challenges—Characterise Implications—Recommend Action (and effect implications)	Favourable
	Challenges—Requirements—Responses; Approach—Method—Justification	Favourable
	Challenge-framing + evaluation + justification	Favourable
	Recommendations with Implications	Favourable w/caveat
	Change to approach, implications	Favourable
	Delay decision on renewables to allow for technology developments and price reductions	Initially Favourable, Later reduced
Composite Design	Fabric first design approach, reduces the amount of sustainability taken out later, e.g., building treated as an integral system	Favourable
	Fabric + energy approach (holistic)	Initially Favourable, Later reduced
	SD detail recommendations + cost savings; benefit	Favourable
	Provide Preface/Context—Make the Point—Provide Evaluation—Suggest Recommendation	Unfavourable
	Design + sustainability approach for compliance	Unfavourable
Design, Technical	Design recommendation of Alternative solutions	Favourable
	Recommendation with justification	Favourable
	Preconceptions with technical descriptions	Favourable
	Knowledge familiarity; technical criteria Familiarity re technicalities	Favourable
Composite financial	Justifications: payback and market debate; market-based financial drivers for buyers	Unfavourable
	Planning + financial justifications to retain	Initially Favourable, Later reduced

Knowing which approaches were favourable is a new, helpful step to calibrating better values-based frames, noting those approaches which were unfavourable. Knowing with which values clusters the approaches were more effective can also be useful for their application in practice, whereby the previous Frame Options tables (§5.2) and the Frame Effects Tables (Appendix-5.3) are also useful to any parties interested to understand more about the effectiveness of specific values-framing approaches with certain values clusters and the frames used—and those best avoided. With these approaches evidenced across multiple cases, this means that values-framing is already used as an important technique to create, enhance, and manage meaningful choices.

Alternative framing approaches

Cross-case analysis also revealed several alternative, non-values-based framing approaches evidenced across several cases, Table 115. This means that non-values-specific framing is used but less predominantly to communicate sustainability which can variously connect with values, or not. Their use is consistent with a variation in connecting compatibly with values towards sustainability improvements, regardless of priority or dominance. The one outlier was a performance-focused framing approach adopted by several architects in the two forms shown, where these were focused more on satisfying building performance than fulfilling client values *per se* (although not mutually exclusive).

Table 115 Alternative framing approaches/techniques (summarised)

Framing Approach	Description
Pragmatic	Achievability, pragmatically
Regulations-focused	Do the minimum required/regulated
Client-focused	Do whatever the client wants
Best practice	Do what's best practice
Standard practice	Do what we always do
Reliable/reputation	Reliability vs experimentation
Fee-focused	Do whatever the fee covers
Budget-focused	Financial achievability
Performance-focused	Fabric first, then renewables
	Passive design

Taken together, this means that values-based framing approaches are more likely to achieve lasting meaningful choices (capable of enduring challenge) which may contribute to increased client satisfaction because meaningful choices are linked to individual values and potentially more satisfying in their achievement. Seeing architects' framing approaches through the lens of choice structuring thus helped reveal values-framing techniques and dynamics. Architects' existing approaches to values-framing over time provide useful heuristics for practitioners to both mobilise and manage a 'values-based choice architecture' longitudinally towards sustainability improvements through more meaningful choices.

5.3.4.3 Reflection on frame effects and strategic framing approaches

This second systematic study confirmed the findings of the initial and intermediate studies, adding new emergent factors and new insights into values-framing success factors and strategic framing approaches. However, it also showed that the values orders and classifications were not useful at process-level analysis of values manifesting in architectural projects. Most importantly, the predominant pattern found across these three study-parts was how individuals interpreting the varying compatibility of sustainability problem- and decision-frames with their values thus triggered values' manifestation and prioritisation in context, for both architect and client respectively. This then revealed that framing and decision-making were driven by dominant values in context, and that by formulating more values-compatible frames and managing choice-spaces with framing approaches, participants could increase the space available for—and therefore help their clients make—more individually-meaningful choices because of values-and-frames shared influential factor of individual meaningfulness.

In one sense, these findings argue that there are no values-free decision-making frames, or decisions, affecting sustainability. Findings on values-neutral open-ended frames does not mean that they were values-free. For, when interpreted by decision-makers, such frames could naturally reinforce earlier client values and activate dormant others because frames can communicate 'data' interpretable as values-compatible. In themselves, those problem frames were values-driven on the architect's part, seeking outcomes e.g., client-satisfaction compatible with their own values.

This study-part thus crystallises the fundamental significance of not only values-and-frames interactions, influences, and effects, but also the paramount importance of recognising and framing to dominant values in context for more individually-meaningful and potentially more enduring decision-making and

choices about sustainability. Because SS2a-SS2b studies showed more fundamental, process-level findings, and these new findings on framing approaches are at a higher, strategic level-of-analysis, they all could potentially be widely applicable and have a broader appeal to practitioners and researchers interested in improving project sustainability and potentially client satisfaction with values-framing.

5.4 Systematic studies: Reflection and implications

Extensions of existing and nascent research have been made by establishing and conceptualising architects' interpretation and application of their clients' values and structures through their sustainability framing processes. This chapter has demonstrated how evidence from two systematic case-group studies of 26 cases and 128 units-of-analysis showed a conceptual shift from static values clusters to dynamic values hierarchies recalibrating when appropriately timed and framed sustainability messages were interpreted by listeners. Both problem- and decision-frames were found to be values-expressive communication devices from which attentive architects readily interpreted their client's values.

These systematic studies support and extend earlier exploratory studies by establishing similar patterns in the underpinning influences and process-level interactions. Using grounded case study methods, similarities and variations in responses between participant-types and cases were predictable according to the content of i) frames by project and stage, and ii) values by individual with clear similarities associated with the approach to architecture and clients they attracted. Significant new emergent factors were also systematically examined for any patterns that may be useful in practice.

Study SS1 with commercially-orientated participants presented systematic evidence that net sustainability is always reduced from initial intentions. However, Study SS2 with design- and sustainability-orientated participants showed that with a predominance of effective 'strategic' values-framing approaches, sustainability's reduction from initial intention to 'final' decisions was notably less. Three plausible, mutually-inclusive explanations concern a) variations in practitioners' values at group-level and individual values associated with sustainability, b) relative success in values-framing, and c) the application of values-framing approaches. These findings from both systematic studies could be useful to enable and enhance net sustainability through improved values-recognition, better values-specific framing vocabularies, and associated improvements to framing that relates sustainability options and rationales more enduringly to dominant values in context, i.e., values-framing.

The cascading sequences of values-and-frames antecedents and decisions as consequents were demonstrated with the help of refinements to the mapping method. Values-and-frames role as critical, interpersonal influence mechanisms of sustainability decision-making are thus confirmed. The final piece of the cascade —Values-Framing Approaches—is composed of maintaining Values-Framing Accuracy and its associated Values-Framing Flexibility through Values Recognition.

Refining interview questions with G3 in SS2 has benefitted from tightly focusing on values and frames interactions, again demonstrated as values influence pathways over time. Narrowing the focus on architect and client as key dyad has also paid dividends. The role and typologies of values-frames initiated in ES3 and developed through these systematic studies have shown that the lack of values-frames maintenance is one potentially significant factor in reduced decision-making favouring sustainability, as predicted during SS1. Most importantly, studying these architectural approach-types established the biggest challenges for biggest gains with the largest audience, whereas sustainability-orientated architects from the

same practice have shown how and which framing works best with difficult clients and sites. The refined research approach has produced novel findings that may help narrow the gap between initial intention to incorporate sustainability measures and delivered outcome.

Taken together, these studies reinforce the viability and potential impact of researching relationships and effects of values-and-frames by confirming both early influences and later challenge interactions as two key phases of design decision-making affecting sustainability—operationalised as spaces for meaningful choice. Focusing on architect and client as key dyad in framing and decision-making was ideal because the architect-client interactions were clearly key to—and dominated—making and later changing both widely-scoped decisions with large impact, and narrowly-scoped routine decisions with cumulative and frequently negative impacts. Focusing on commercial-, design- and sustainability-orientated practitioners has been useful to establish the biggest challenges for sustainability from a cross-section of recognised architectural approaches using a composite values-and-frames lens. Thus, the interactions and effects of values-and-frames in project sustainability decision-making processes were examined from three distinct architectural perspectives. Whilst not mutually exclusive, examining values-and-frames from these three perspectives was helpful to reveal similarities and differences in sustainability decision-making discussions.

Moreover, whilst predictable differences were found in discussion content and participants approaches, repeated similarities were found that formed underpinning principles of values-and-frames foundational influence process and effects, verified as applicable across all cases. Thus, fundamental principles of values influence pathways via frames and the underpinning values-and-frames influence process over time were demonstrated with confirmatory findings and

extended through examinations of key emergent factors. These principles are thus considered theoretically saturated.

It is plausible that some clients' values may predispose them to favour or disfavour sustainability. Hence, it behoves practitioners to encourage the former and discourage the latter through values-elicitation and values-based re/framing of sustainability throughout projects, given their professionally-mandated stewardship embedded in nationally-recognised professional codes from RIBA and CIAT, and work towards better outcomes than least-common-denominators. One clear way is through discovering clients' and stakeholders' drivers—manifesting as human values: relatively stable and potentially accessible antecedent motivators of decision-making and core components of meaningful choice.

Yet professional codes' humble supplications of sustainability 'consideration' or 'awareness' seem ineffective and incongruent with the broader environmental and social challenges, let alone economic as the frequent reckoner. Framing legislation and voluntary schemes worked to some extent, but movement away from statutory baselines is frequently left to architects formulating and framing sustainability to their clients' prioritised and contextually-instantiated values in ways that are more individually-meaningful and enduring. Thus, these two findings chapters present findings that practitioners and researchers may find useful in such endeavours. All the findings are further integrated and triangulated with existing research in Chapter 6.

Chapter 6 Interpretation and Discussion

6.1 Chapter introduction

This research sought to fill gaps in knowledge and practice by understanding more about values and frames' influences on sustainability decisions in project decision-making contexts with the hope that such a study would reveal some interesting and useful results about their inner workings and effects. Only by first examining 'values-and-frames interactions' could 'meaningful choices' then be understood (as a synthesis of values+frames+decisions), and 'opportunities and spaces' later emerge as potential room for sustainability improvements. An understanding of these interactions and effects on sustainability rests in a fine balance between the individual and interindividual, between immediate and longer-term impacts on local contexts: a linking of deeper human values to deeper building impacts than are normally considered.

The purpose of this chapter is two-fold. First, importantly, the main findings across the Exploratory and Systematic Studies naturally converged into more general patterns most visible after they concluded. The chapter thus requires more depth than normally expected. It provides a cross-group interpretation and integration of the main insights (Dunleavy, 2003) by synthesising the main findings and conclusions from previous chapters into five main clusters on values-and-frames content, interactions, and effects in the process of deciding about sustainability. Together these clusters form novel insights towards original contributions to knowledge (§7.2) before triangulating their discussions. Thence, second, the wider implications of the integrated findings are discussed to connect or triangulate with existing knowledge (§2) and emergent literature arising during this grounded research, which are therefore relevant to its interpretation. The following sections thus logically distinguish the core findings of: the overall Values-and-Frames approach (§6.2); the decision-making process, its content and character (§6.3); variables' main interactions, core mechanism, and their effects on meaningful choice (§6.4-6.6).

6.2 Composite Values-and-Frames approach

A gap in existing knowledge exists to understand how the complex challenge of values and frames influence on decision-making about sustainability can be usefully approached and examined to produce reliable and valid findings. As the most significant overall finding, this research has demonstrated that examining project sustainability decision-making processes with a composite Values-and-Frames lens provides a useful approach to unlock new avenues for understanding key factors like their roles, interactions, influences, and effects. These factors are not normally as clear when handled separately and simply compared or overlaid; this work has shown that they can fruitfully be studied conjointly.

By converging existing but previously disconnected research approaches to values and to frames with a unified lens, data was generated and always searched for both variables, what they do to each other, and how they affect decisions about sustainability. Here, the composite pair were always addressed jointly, never one without the other, as argued in Chapters 2-3. Using this lens with the case-based grounded approach also helped to identify and manage emerging factors; hence, as the research evolved, various constituents and their combination were examined to see their effects on each other, on key portions of the decision-making process, then their overall effects. This initially, then repeatedly, showed some interesting results as follows.

6.2.1 Rich landscapes of 'content' in decision-making-as-process

The broad review of literature at earlier stages of this research identified that various approaches have considered decision-making as not as an isolated act or a single event but a process; however, no literature was found that converging values and frames could shed light on such developments in architectural practice.

Taking a novel, composite values-and-frames approach helped demonstrate the usefulness of seeing architectural sustainability decision-making-as-process with key stakeholders providing 'inputs' of values and frames as 'content' into framing processes. Considering values-and-frames as a tightly-linked, composite concept naturally drove the grounded exploratory search through project design briefs into decision-making, arriving at final decisions as its conclusion. Deliberately following emergent factors—both during interviews and their analysis—naturally created links through projects from start to finish. From this it unexpectedly emerged that sustainability decision-making can be explained as nested within framing-as-process as broader-ranging interactions of individuals raising and discussing, framing and deciding on sustainability in projects.

The approach also demonstrated the content, character, and effects of both values and frames of architects and clients as key decision-makers, and that they were contingent upon the specific context and parties involved—with their influences newly crystallised through the composite values-and-frames lens on sustainability decision-making. Importantly, considering the composite concept in search and analysis led to three key sets of findings about their nature and relationships, as follows. Similarities in the content of values and frames revealed that values were communicated and contextualised through frames, discussed in §6.3-6.4. Most importantly, values-and-frames analyses and comparisons found that 'values-frames' were a unique type of frame with helpful or harmful effects in decision-making, discussed in §6.6.1. Thus, values-and-frames having properties as content, character, and effects in decision-making became important to understanding their impact on project sustainability, and meaningful choices about it.

6.2.2 Important patterns in values-and-frames interactions

Using a composite approach helped begin revealing patterns that showed how values and frames can interact with and influence each other over time in project

sustainability decision-making contexts. Findings clearly showed evidence of how values were expressed through frames, and how frames could characterise sustainability in ways that were varyingly compatible with values through individual meaningfulness. With a composite lens, six commercial case studies first showed that the values and frames detected would influence initial and interim decisions where sustainability was initially favoured, but later reduced during critical challenges, as shown in ES2. It was then found that these project decision 'landscapes' normally evolved through shifts and changes in the content, relationships, and effects of values and frames, as shown in ES3b-ES3c.

Consequently, it was shown that, in such evolution, 'final' decisions typically favoured sustainability reductions attributable to the incompatible relationships between frames' content and values' priorities in context, as shown in ES3-SS1. When architects' problem-frames reflected or resonated with higher-priority values, decisions were typically favourable. For instance, when renewable energy options were framed as marketable assets to commercial office clients with profit and gain-related values, their decisions were favourable. When framed as extra upfront cost instead of quantifiable longer-term savings, decisions were unfavourable. Similar patterns were identified across all twenty-six cases, which can be described by seven core principles (Table 116), integrated and linked to existing literature in §6.4 below. Thus, identifying the core interrelationship of values and frames as meaningfulness in the decision-making process was key to establishing their influence on decision formation and evolution through frames' varying compatibility with values in context.

6.2.3 Potential room for improvement in more meaningful choices

Because the preliminary exploratory studies ES1-ES2 showed that sustainability was typically reduced, further studies used and built upon those foundations laid

using the composite values-and-frames approach to examine any room or potential for improvement. With this approach, three key findings emerged about the nature of, and possibilities for, improving sustainability decisions by facilitating better client decisions. First, 'spaces' for making decisions were highly constrained, but—importantly—key constraints were accessible human factors which could be unlocked with a composite values-and-frames approach, as shown in ES3b. Second, opportunities to create more space for client's meaningful choices both existed and could be created through frame effects on and via values. Making frames-to-values interconnections via compatibility therefore provided plentiful 'meaningful-choice opportunities', as found in ES3c. Third, individually 'meaningful choice' was the goal in improving client decisions through harnessing the effects of values-and-frames, shown in ES3b-SS1. Thus, if heeded and harnessed, values-and-frames interactions can constrain or facilitate more opportunities for individually-meaningful choices about sustainability in projects through the mechanism and techniques as follows. As enabled by the composite approach, these findings are integrated then linked with relevant literature in §6.5 below.

6.2.4 Values-based framing mechanism and techniques

Using the core values-and-frames approach, a more systematic set of studies first on commercially-orientated cases (SS1), then on design- and sustainability-orientated cases (SS2), revealed further evidence of patterns which could be useful for practice. For this range of cases, such patterns involved: which frames worked with certain values; which factors were key (i.e., interactional and relational factors of values-and-frames, leading to finding frames' values-based meaningfulness); what frames' effects were on decisions via values; and the broader-scoped patterns in the ways that architects approached framing sustainability in decision-making. Taken together, these factors were thus interpreted as a useful values-based framing mechanism, approaches, and techniques which could help architects and professionals facilitate more space for

better, more meaningful decisions to improve project sustainability. These three sets of findings are integrated then connected with literature in §6.6 below.

6.2.5 Significance and implications of a composite Values-and-Frames approach

Current approaches to sustainability decision-making (e.g., §2.3 or §2.4.1) typically address some of the overlapping factors studied here, but not all, and none in the context and analysis-level. Where some research gets close to studying several factors simultaneously (Bond *et al*., 2010; Lakoff, 2014), they do so at alternative analysis-levels than an individual-level perspective on interindividual decision-making, and none in AEC project contexts. Convergent approaches are emerging in AEC research (Klotz *et al*., 2018) with findings useful for research and practice because they more closely represent the field's complex and contingent natures. Where Shealy and Klotz (e.g., 2016, 2018) converge norms and framing of sustainability choice options in project design decision-making systems and environments, Harris *et al*. (2017) converge nudging and influences in choosing whole-systems approaches to infrastructure design, and Delgado *et al*. (2018) examines frames and trade-offs in building procurement. Scarce existing empirical research addresses both values and frames *together* in the context of deciding about sustainability even beyond project contexts. Most approaches tend to overlook or underappreciate Values-and-Frames' joint interconnections with sustainability decisions. When research approaches do acknowledge the connection (e.g. Shah *et al*., 1996; Krishen *et al*., 2016), both the context and values-based motivations they theorise vary in at least quality, context, and tangibility to architectural design and construction.

On decision-making, Query Theory (Johnson *et al.*, 2007; Weber *et al.*, 2007) was also interpreted as emphasising the importance to determine sequences of, e.g., how client values and needs are translated into architects' choice/decision option

frames—because, as shown in ES3-SS2, replaying this framed values information would activate internal querying processes towards decisions. Finding values influence pathways and its interrelated principles thus "provides evidence and process-level specification" of the implicit values recognition, where frames' 'playback' of values-based solutions/rationales thus demonstrated "their causal role in arriving at a decision" (Weber and Johnson, 2011:91). The composite values-and-frames approach has begun to facilitate this and preliminarily demonstrated its promise with initial principles, thus establishing an interesting agenda for research and interventions.

Sustainability provides a unique problem-set to see how risk, threat, cost, and gain are translated into decisions from values-and-frames perspective. A platform of related research on framing sustainability for decision-making (Shealy and Klotz, variously 2015-2019) tends to look at isolated circumstances and typically overlooks how values-and-frames interact with each other and influence decisions over time in project decision-making contexts, and how that evolution impacts any final decisions, which this research showed in ES3-SS2. Shealy's attention mainly regarded framing for concentrated decisions by individuals using sustainable design software (*ibid*.). No research was found regarding inter-individual project sustainability decision-making over time addressing the complexity of real-world events in contexts; these were not well-understood from a values-and-frames perspective. This research contributes to such debates with the initial set of principles.

The Shealy-Klotz work was mainly laboratory-based and used online tools to manipulate choice options in a pre-determined way (*ibid*.). This composite values-and-frames approach allows investigation using expert accounts of real-world projects and choice-options first formulated through architects' interpretation and re/framing of client's earlier-framed values and project data. Subsequent problem-frames then delimited client's choice-space according to Query and

Prospect Theories (Kahneman and Tversky, 1979; Weber *et al*., 2007; Johnson *et al*., 2007), and gave expectations of ensuing client decisions according to these theories. These findings have shown other possible explanations, such as early frames-to-values compatibility, which is later broken when clients shift their values priorities in response to challenge-frames, providing a new perspective on preference reversal (Kühberger, 1995). Taken together, this research is a novel application of Query Theory (*ibid*., 2007; 2007), Framing Theory (cf. Entman, 1993; Matthes and Kohring, 2008; Cornelissen and Werner, 2014), and context-dependent constructed choice theory (Krantz and Kunreuther, 2007) with interpersonal values-and-frames interactions over time specifically in the ways outlined above.

Clearly significant factors of values-and-frames and their interactions, influences, and effects in sustainability decision-making are now clearer with the composite approach demonstrated herein. The approach is significant because it both pulls together and works with all the empirical discussions documented; it is therefore a promising idea for understanding meaningful sustainability choice in decision-making processes. It can now be used to research a broader range of interindividual decision-making situations about sustainability where stakeholders are accessible and decision-problems need framing and deciding, both within and potentially beyond AEC by extrapolation. The composite values-and-frames approach is considered to be theoretically saturated for these participants.

The approach shown here begins to fulfil the need for clarity about both values and frames interactions and influences in deciding about project sustainability, which can help architects facilitate more meaningful client choices. This research therefore contributes to multiple overlapping conversations with a novel, composite approach to values-and-frames in project sustainability decision-

making at individual-level perspectives on interindividual interactions, which currently remains under-researched.

6.3 Content and character of sustainability decision-making

Understanding values-and-frames interactions and effects in sustainability decision-making with a view towards improvements was facilitated by first understanding the content and character of core aspects from the architect as one key actor. Whilst separately values and frames are becoming better understood, no research examined both variables in this research context and analysis level (as argued above and in §2.6). Furthermore, no research was found characterising the content and relationships of values-and-frames in decision-making over time, like temporally-extended architectural projects. This is relevant because interindividual, longitudinal decision-making more closely and naturally resembles how key stakeholders encounter and conduct decision-making in practice. Thus, rather than an act or a series of events, considering sustainability decision-making as a process meant it and its components were usefully discretised from interviews, and their contents and characteristics studied to understand their roles, relationships, influences, and effects. It emerged that this process could be usefully mapped when interviewees provided rich descriptions of multiple cases with numerous units-of-analysis at initial decisions, critical challenges, and final decisions stages (discussed below, §6.4.1). Thence this became a study not of individual decision-making acts (e.g., ones' deliberations, decision criteria, and weightings considered), but of the content, interactions, process, and effects of interpersonal decision-making over time from architects' perspectives.

Four sets of core findings comprise fundamental constituents of sustainability decision-making found using the composite values-and-frames approach, first

interpreted and integrated. Participants identified four main categories of key decision-influencing stakeholders (discussed below, §6.3.2), with key actors contributing to the conduct and contents of framing for decision-making-as-a-process (§6.3.1). Their values and frames formed actors' contributions of discussion 'content' to the process (§6.3.3-6.3.4). The contents had interfaces and interactions (§6.4), a core mechanism applied in practice (§6.4.2, §6.6), with effects on decisions as outputs and sustainability as outcomes (§6.5.3). Findings on 'decision-making-as-a-process' and its 'contents' are first interpreted to integrate their core findings, on which the following sections are built, and then triangulated to existing research (§6.3.5). The remaining discussions are thus 'grounded' and strengthened with improved validity and reliability.

6.3.1 'Content' of decision-making-as-process

Emergent findings inductively-arising from G1+G2 data showed that sustainability decision-making could be usefully examined as a process which revealed patterns of key 'content', discussed respectively as follows. Guided by the values-and-frames approach, evidence from ES1-ES2 converged in ES3a study of typical influences in decision-making processes to establish typical contents, characteristics, and relationships which revealed their significance, thus informing and later confirmed through systematic studies SS1-SS2. This showed that disaggregating and mapping decision-making was a useful and necessary first step to systematically reveal and pinpoint only key factors influencing sustainability decisions from a values-and-frames perspective in ES3b. Thus, typically dynamic, interactive, but complex processes and interactions became clearer; hence finding and conceptualising the content was required to understand the process and any improvement opportunities.

Those exploratory studies found that sustainability decisions were typically generated and managed through decision-making processes based on sequential

contributions of key stakeholders' values and frames as 'content' interacting in an interpersonal process of framing and deciding in context, which evolved in recognisable stages over time. Therein, clients and architects were main contributors, and their values and frames were key variables—or decision-making discussion 'content' with patterned characteristics, interactions, and influences. Decisions were actor's 'process outputs' with sustainability as 'outcomes'. These variables with their relationships constituted Units-of-Analysis. Project chronologies comprised series of interlinked but discreet discussion-events with sequences and phases in serially-repeating patterns over time, wherein values-and-frames interacted and influenced decision formation, shift, and change (ES3c), interpreted and discussed below.

The studies showed this content and its character were demonstrably contingent on specific aspects of context and parties' roles, experience, and individual characteristics varying in impact and accessibility. Of those characteristics, the most frequent, core influences were attributed to both individual values and interpersonal communication (ES3a). Examining frequent communication factors with a 'frames lens' showed that they could be usefully interpreted as aspects of the framing process, interpersonal framing/reframing, and frames. Examining all those influences with a 'values lens' revealed values presence and potential impact in sustainability communication—via frames and framing. Importantly, this would show that despite some conditions being fixed or tacit thus normally 'inaccessible' inter-individually (e.g., regulatory context, client experience), their emergence suggested they were being leveraged *as content* in decision-making discussions, e.g., when architects framed regulations, costs, or risks based on decision-makers' experience (see §6.3-6.4.2). Furthermore, these key influences were closely related in ways normally overlooked, but became visible through a values-and-frames lens. They therefore could be more closely examined.

When conceptualised and mapped as a process, the content and characteristics of decision-making were found shifting and changing based on key variables' content and their interactions—what people were saying, how, when, and why—manifested in context as values-and-frames and their influences over time. Whilst the character of earlier decision-making was typically aspirational, it later became more like problem-solving, challenge- and risk-management. These 'discussion frames' may explain the characteristic manifestation and priority of the actors' values in context, discussed below. Studies ES3-SS2 suggested that knowledge and information (i.e., 'content') were not enough to establish sustainability meaningfully. This implied that skill was needed in both listening and applying knowledge appropriately within interpersonal relationships co-constructed by contributions from both individuals. Knowing this, findings on stakeholders, values, and frames are integrated below.

6.3.2 Decision-influencing stakeholders

Exploratory studies demonstrated that key decision-influencing stakeholders provided 'input' into project sustainability decision-making processes, mainly through the frames of decision-problems and critical challenges. Their inputs were typically received, translated, and filtered by architects then reframed to clients as principal decision-makers from architects' perspectives. Both architects and clients were therefore significant to sustainability decision-making.

The studies showed the architect's fundamental role and relevance in key project junctures as facilitators and influencers of 'spaces' and options for individually meaningful choices about sustainability through framing and reframing (ES3-SS1). Because participants were found to translate sustainability's individual meaning for their clients via frames, this means that architects are key to setting and managing the stage for sustainability decisions. It also means that as 'translators' and 'problem-framers', architects were reliable participants for researching

influences and opportunities for improving project decision-making about sustainability. Knowing this, targeted interventions can focus on architects' framing for sustainability decision-making.

The research newly found a hierarchy of stakeholders' significance in sustainability decision-making from the architect's perspective: clients, statutory authorities, other consultants, and contractors (ES3a). Although unsurprising, this was significant for the research in helping to focus on and disaggregate values-and-frames with core, key decision-makers, on which subsequent research phases would concentrate and expand. Most importantly, architect-client conversations were shown to be key loci for facilitating and influencing both routine and broad-scoped sustainability decisions. Together this also showed that the participants implicitly prioritised stakeholders' influences, as demonstrated through the frequency of their reports and the frames' content, whereby architects translated such influences back to their clients (ES3c, SS1-SS2). This suggested that participants understood stakeholders' relative influence, and that such understanding likely forms experience-based heuristics, e.g., stereotyping (ES1, ES3c), which subsequently influenced their framing and frames. This would partly explain participants' typical framing patterns, e.g., regulatory ceilings, cost baselines, or statutory thresholds. But without knowing values and their relationships to framing, such explanations are weak and incomplete. Knowing this, values-and-frames as discussion content are considered below.

6.3.3 Values in framing and decision-making

Findings on the first of two main variables are integrated on the most important patterns of what values *are*, needed to later discuss what values *do* alongside frames (§6.4-6.6). With the expectation of finding values' influence, fundamental emergent findings comprised values' content and character. Whilst literature established that values are fixed or assumed fixed, this research showed that

values are adaptable contextually in projects, and their manifestation can evolve through contextual priming and de/activation via frames' compatibility with values.

Study ES1-ES2b demonstrated the role of values in architects' framing sustainability for decision-making, requiring first the content and character of values, generated in three forms for cross-checking. Those studies showed that whilst shared, practice values may have provided an umbrella context-frame, the manifestation of values through individuals' sustainability framing were evidently more relevant to sustainability decision-making because clients responded to values framed in context. It was therefore concluded that individual values were more useful evidence to understand values-and-frames, because values' interactions and effects via individuals were more relevant than their origins.

The findings from ES2c demonstrated that knowing first about architect's values was useful as indications of what to look for later in datasets when searching for other stakeholders' values. Knowing values, it became possible to spot values in frames—a critically important finding because architects' values could be spotted and corroborated in context with their frames. Client values were interpreted by participants (e.g., during projects), then analysed from transcribed, retold discussions. Hence, to enhance analytical reliability of clients' values, they were corroborated with their frames, thus possible because it was already known how to spot values, and values-in-frames. Clients' design-problem frame components repeatedly revealed what they valued and in what priority. Most significantly, it also emerged that architects' interpretations of clients' values mattered more to their framing of sustainability in context, not clients' actual self-generated values. The research therefore showed that values are accessible through elicitation and interpretation via frames. Such findings also more closely resemble professional practice where client engagement using values questionnaires or workshops is uncommon.

Typical interpreted client values from commercially-oriented architects were categorised as of responsibility-type, benefit-type, and profit/gain-type. Whereas clients of design-oriented architects typically expressed values associated with higher-standards, good-quality/lifespan, long-term commitment, and lifestyle-type values. Clients of sustainability-oriented architects expressed values associated with energy and natural environment conservation, responsibility, future-proofing and lifespan-type values. Taken together, this shows that architects clearly recognised a range of uniquely identifiable client values in sustainability decision-making. This indicates that client values were informing architects' understandings of decision 'landscapes' and therein the available choice-space in ways that are shown below to be useful to both parties.

Findings from SS2a-SS2b showed that knowing about architect's interpretations of client and stakeholder values were both critical and useful because values manifested individual meaningfulness in context. Knowing what was valued and therefore more meaningful to clients assisted some architects to formulate better, more individually-meaningful and therefore effective frames to elicit favourable decisions. SS2a showed that key factors contributed to the accuracy of architects' interpretations. Through their probing of client's initial framed needs and priorities, architects formed and employed values interpretations to begin boundary-sensing of available choice-space. Having interpreted those values, some architects successfully formed values-frames, e.g., of practical, tangible solutions with payback periods, whereby the client's values, e.g., long-term commitment, provided "lines-of-argument" to link sustainability with values. Importantly, framing for decision-making, the decision-making process, and acts of choice themselves were interpreted as values-expressive behaviours. Hence, analytically confirming the accuracy of architects' recognition of their clients' values was possible through the values expressed in problem-frames and decision-frames found throughout participants' accounts. Three factors were found to contribute most to more accurate interpretations: client values' clarity, architects'

contextual attention/recognition, and architect-client values compatibility. This means that inattention or unclear values reduced architect's recognition, whereas values compatibility increased recognition. Together, these factors contributed to architect's varyingly-successful framing and decision-making, also helpful to assess their values interpretations.

However, SS2b again confirmed earlier findings to show that in framing and decision-making, values manifested in prioritised clusters for both architects and their interpretations of clients' values. Across those case-maps, key factors described such 'values hierarchies' and their dynamics, of which the first two factors were most critical. Most importantly, these factors contributed to architects' recognising and translating client values into their problem-frames as projects developed. Some values were more dominant and therefore interpreted as higher-priority. Active and dominant values normally were interpreted as the principal drivers of their decisions, whereas some values were inactive in those decisions and considered 'deactivated' rather than changed. In many cases, values e.g., (Vx) and (Vy), deactivated in later sustainability decision-making discussions, whereas (Vy) re-activated in decisions to proceed with the framed decision-problem. Whilst there may have been other values that the values-holder intended or perceived were present or wished to enact, only those values which architects retold were the ones they considered 'in action' which then informed their framing in context (see §5.3.2). Other key factors contributing to architects' successful framing included the stability, internal consistency, and dynamics of values clusters contextually 'recalibrating'—attributed to client reactions to frames' content and meaning, discussed below. However, rare cases showed that some values hierarchies remained internally consistent and typically stable. From this it was concluded that individuals' with highly consistent and stable hierarchies had well-established and strongly-held values 'systems' with clearly dominant values which consistently drove their decision-making (see §5.3.2.4). Whilst architects'

and clients' values systems (i.e., at a higher level of abstraction) tended to remain relatively stable across the series of discussions, it was values' manifestation (i.e., activation/deactivation) and priority within contextually-responsive values hierarchies and thus influence on frames which shifted, not changed.

Significantly, these factors provided useful signals of clients' potential responses to frames and consistency of decisions over time, which some architects detected and responded. This suggests that clients' values and any hierarchy shifts are useful predictors of frame receptivity and decision consistency. Thus, from the findings on values across the studies, it was concluded that values represented individually meaningful actions, goals, and states to both architects and clients, and were most likely the core motivators and influencers of sustainability framing and decision-making, discussed below. Taken together, this integration shows that values were clearly significant to sustainability decisions because their content manifested individual meaningfulness and motivated framing and deciding meaningfully (see §6.4-6.5).

6.3.4 Frames of sustainability

Findings on the second of two main variables can be integrated on what frames *are*, later needed to discuss what frames *do* (§6.4-6.6), e.g., influences and effects, from a values-and-frames perspective on meaningful choices about sustainability.

Evidence repeatedly showed that frames were accessible representations and sources of meaning contributed by aforementioned stakeholders as 'content' of decision-making processes. In their decision-making discussions, findings showed the values-based content and character of sustainability frames were clearly related to the decisions made. Findings on frames across the studies showed that several key factors on frames' content were useful explanations for these participants' sustainability framing in decision-making. Because values were found to represent individual 'meaningfulness' and may motivate and influence

decision-making, it therefore follows that framing sustainability decision-problems to reveal their association with decision-makers' values can influence favourable decisions—a central tenet of this thesis. Hence, any relation of frames' content with values would be significant to shaping better decisions as meaningful choices. Findings on values-related content of sustainability frames were therefore vital to understanding frames' overall role in decision-making.

Study ES3 showed that sustainability's (contested) meaning required contextual interpretation and application, involving architects making values-based selections and/or trade-offs when framing decision-problems to clients (ES2b, SS2). Earlier findings converged in SS2 whereby frames not only communicated individual meaning, but more importantly, sustainability frames of both decision-problems and decisions communicated values-based meaning. The core factor through each was attributed to frames' influential, or motivational, content associated with human values. More specifically, values were associated with 'frame contents' as both the 'tangibles' and 'intangibles' of sustainability in projects, whether immediate or long-term. Framed '*tangibles'* were predominantly the what's/how's of project sustainability, and framed '*intangibles'* the whys/wherefores. Based on patterns of evidence across all the cases, it was concluded sustainability frames could communicate—and constrain—values-based meaning.

From ES3-SS2, architects' frames showed they knew that subsequent project decision-making would involve evaluating alternatives, e.g., clients choosing green roofs or more profit, etc. When framing and choosing sustainability, architects and clients typically invoked values-based judgements/evaluations and trade-offs. Deciding unfavourably indicated that frames' values-based motivational content was typically being interpreted by clients as varyingly compatible (i.e., incompatible) with their values before deciding. Importantly, varyingly-favourable responses to frames were attributed to the relation of frames' values-based

meaning to decision-makers' prioritised values. So too were the values-based motivational content of clients' frames being interpreted by their architects, as the case-maps showed. These core linked factors were repeatedly found especially notable when clients framed their design-problems to architects with incompatible values. Repetitive patterns of frames compatibly connecting with values through individual meaningfulness hallmarked effective values-framing. Hence, it was concluded that frames can communicate to and from values with values-based meaning, thus influence varyingly-favourable decision-making.

Case maps also showed the important (actively-dominant, highly-prioritised) values of both architect and client shifting emphasis and priority in response to varyingly-compatible frames along the series of discussions (discussed below). This means that by sequencing their conversations to find values first before framing decision-problems, professionals can identify values-based motivational anchors to which frames of sustainability options and rationales for their selection can usefully link for more meaningful choices. Knowing this, values-and-frames interactions and influences are discussed below.

Taken together, this means that sustainability content of frames can communicate it in individually-meaningful ways that relate to values, including both problem-frames and decision-frames with key differences shown in purposes, qualities, and contents. Therefore, the content of frames became critical to decision-making about sustainability, where values-based and values-linked frames were the most significant factors of frames' content in facilitating decisions favouring sustainability because clients would recognise the individual, values-based meaningfulness proposed by frames/framed solutions. Given the evidence, this is the most plausible explanation to account for the variety in architects' frames' content and the effects found across the twenty-six cases (following the grounded inductive-deductive-abductive cycle as Strauss and Corbin (1998)). Because the same core principles applied for both clients' and architects' frames, this can account

for how not only architects knew client values, but most importantly how clients can make individually-meaningful decisions about sustainability, discussed below.

6.3.5 Significance and implications of findings on sustainability decision-making

Existing research was interpreted to suggest that separately human values and communication frames could be fundamental, accessible variables jointly holding promise for better understanding decision-making discussions as spaces for sustainability improvements. Whilst no research was found combining these variables in this context and analysis level, the 'convergence' idea is supported specifically by Klotz *et al*. (2018), who advocate the usefulness of combining approaches to unlocking behavioural decision-making for AEC sustainability improvements.

Examining sustainability decision-making with the convergent values-and frames approach adds to conversations in cognate overlapping research, which has converged similar combinations of variables, contents, and contexts; specifically, values-based decision-making (Meglino and Ravlin, 1998; Hall and Davis, 2007); sustainability and environmental decision-making (Bardwell, 1991; Arvai *et al*., 2012); various non-technical determinants of pro-environmental behaviour (e.g. Steg *et al*., 2014; Stern, 2000); and design decision-making (Almendra and Christiaans, 2009; Hansen and Andreasen, 2004). This research brings new insights to such debates by showing not only are the content and character of values and frames individually and jointly significant to sustainability decision-making processes, but also that they are crucially interrelated because of their shared influential factor of individual meaningfulness. Moreover, values-based meaning plays forward significantly in establishing and maintaining sustainability's individual meaning with values as vital anchors thus attributed to motivating decisions.

Several key factors are currently missing or underexamined in research. Findings on the values-based and frames-based content and character of sustainability decision-making began revealing the interactions between values and frames, and were critical to later establishing their influences and effects on framing and deciding, thus incorporating inputs from architects, clients, and stakeholders-via-architects typically. However, it was architects' interpretations of client values that mattered most to their iterative process of framing and consequent reframing of sustainability based on those interpretations; based on such frames, sustainability decisions were made. Most importantly, it was shown that human values and communication frames are accessible, core variables jointly holding promise for both research and practice to unlock more enduring motivations to decide favourably about sustainability because of their values-based content and interactions. Values without frames lacked context, whereas frames without values lacked individual meaningfulness in context. Understanding the tripartite content-interactions-process thus becomes critical to appreciate any potential for sustainability improvements because projects evolved and changed over time.

Whilst some related research takes a broader-brush approach to include any stakeholders (Mills, 2013), others focused on only one stakeholder (e.g., clients (Zhang *et al*., 2019)), or design engineers (Shealy *et al*., 2019; Delgado *et al*., 2018)). But few focused on key, 'initiating' project professionals like architects (Brown, 2002; Ali *et al*., 2008), who are normally involved from project conception to post-occupancy in key roles (Jamieson *et al*., 2011; Golden, 2017), found here influencing projects as designers and managers of building design and construction processes. The foregoing aspects of the research are significant and offer new insights to the study of architects and their interactions with clients, both of which were shown to be key to sustainability framing and decision-making.

Existing research on contextual values instantiations (Hanel *et al*., 2017) and values-behaviour links (e.g. Roccas and Sagiv, 2017) do not explicitly address the

contextually-influenced shifts in values priorities resulting from frames' influences shown in this research as new insights to values-in-context. However, it is crucial to differentiate such values instantiations (Hanel *et al*., 2017) or 'values states' (Skimina *et al*., 2018), and values categories (*ibid*., 2017) or 'values traits' (*ibid*., 2018). The WeValue platform of work (e.g., Harder and Burford, 2018) focuses on values in context because they are relevant to socially beneficial actions; when values are shared—e.g., first communicated then potentially jointly-held—they can become central to decisions about improvements that are not only individually- but socially-beneficial. Values in design and decision-making (Mills, 2013; Novak, 2013) rightly focus narrowly on their two areas to establish their presence and significance. This research showed values manifesting in response to frames through individual instantiations or 'values states' of higher-order 'values traits' in context through frames. Such findings are significant because they provide new insights into debates on values-in-action in AEC contexts.

Frames have been studied at individual, group/organisational, and strategic levels-of-analysis in communication (Cornelissen and Werner, 2014); decision-making (Kühberger, 1998) design framing (Paton and Dorst, 2011; Dorst, 2015), and design team framing (Hey, 2008; Hey *et al*., 2007). Because no research was found addressing frames and framing at interindividual levels like architect-client project decision-making, this work brings new insights to those debates in this context by including the role, relation, and interactions of individual values-and-frames. By integrating findings on frames from this joint, convergent perspective, the research established that values-and-frames' contents are reciprocal and contextual, linked through individual meaningfulness—a significant new insight adding to debates on influence in interpersonal, project-based decision-making processes.

Whilst design teams may cyclically negotiate a 'common frame' (Hey *et al*., 2007), architect-client (and architect-stakeholder) framing, more closely resembled

turns-at-talk (Schegloff, 2007), a self-explanatory, common, and well-understood but more 'linear' feature of interpersonal discussions. Moreover, values-and-frames influence sequences align with not only turns-at-talk theory (Schegloff, 2007), but also constructionist epistemology (Papert and Harel, 1991) and intersubjective ontology (Hass, 1988) whereby two individuals construct their realities in two separate minds, which may intersubjectively share characteristics giving the illusion of objective reality. Hence, it is logically and likely physically impossible for two individuals to share identical thoughts and, by extension, share identical frames-of-mind. In this account, individual's frames would be constructed from their interpretations of discussion-participant's contributions made through turns-at-talk on a linear timeline, and share features intersubjectively, but not identically.

Taken together, the values-and-frames content and character of sustainability decision-making-as-process from these architects' perspectives provide the minimum necessary components to follow their interactions over time, and identify potential room and useful techniques for improvements, discussed below. Conceptualising decision-making-as-process helped discretise complex and dynamic interactions, identify key decision-influencing stakeholders, and some core components of their interactions, with values-and-frames as decision-making 'contents' conceptualised as 'process inputs'. This content was shown to have important interrelations with each other; knowing this, their interactions, influences, and effects on decisions can be discussed next, which are reliant on the above integrated findings. These contents are therefore useful to appreciate some key factors comprising and influencing sustainability decision landscapes. The core concepts of values-and-frames content and character are considered to be theoretically saturated for these participants.

6.4 Interactions between Values-and-Frames

Having shown that sustainability's meaning is typically translated through frames, this could contribute to making or missing opportunities and low-achieving projects. Having demonstrated that sustainability frames' content has shown values can influence decisions, that frames can influence decisions, and individual meaning is related to both values and frames, key puzzle pieces were missing. Both values and frames are not normally researched together, which means that current research may miss how they interact and jointly affect project sustainability decisions, which are key to project sustainability outcomes. Hence, there is a need for clarity about what happens in sustainability decision-making from a values-and-frames perspective, which can help architects facilitate better client decisions. By looking at values and frames influences, it was envisaged that the findings would show something interesting about what these variables do and how they interact in sustainability decision-making. This was found and operationalised as the search for values' natural influences in typical discussions, using frames as a device to identify the location, structure, and principles of these variables' relationships in decision-making discussions through process mapping, thematic, and relational analysis.

Values-and-Frames interactions are the first of three most significant clusters of findings, because they unify the results on discussion content, process, underpinning factors, and interacting forces. These findings' interpretation and integration is followed by triangulation with existing research. Repeating patterns in values-and-frames' roles, relations, interactions, and sequencing over the first six cases showed how these variables
interface and their influences unfold over time through decision-making discussions. Systematic mapping of twenty further cases showed characteristically similar underlying patterns, describable by a simplified equation to distinguish and

unify the fundamental principles of values-and-frames interactions in sustainability decision-making. Thus, spaces and pathways for more meaningful choices via values-and-frames emerged (§6.5).

As found in all cases, those patterns were most usefully characterised as values influencing frames in serially repeating sequences, from 'problem-framer' to decision-maker through turn-taking with problem-frames, solution-frames, then decision-frames, over time. Therein, architect-speakers' values typically influenced the communication-frames they used in conversations to communicate their points. This normally involved them choosing what to say to whom, when/where, how, and why. Unpacking these interactions and mapping values influence pathways via frames over time (§6.4.1) then allowed the basic, underpinning patterns to be distinguished and integrated into some potentially fundamental, underpinning principles describing sustainability decision-making practices with a values-and-frames lens as experienced by these participants (§6.4.2). The principles and equation provide a useful way to characterise values influence over time, allowing individual variables to be pinpointed in a sequence to isolate the strength, sign, direction, and meaning (as RA) of each influence. Taken together, 'values-and-frames interactions' provides a novel conceptualisation to characterising influence patterns in sustainability decision-making practices over time within project decision-making processes (§6.4.3).

6.4.1 Mapping interactions between Values-and-Frames

The development of case 'maps' (§4.4.2,§5.3.1) was useful to show the values-and-frames as they evolved across each of the twenty-six projects. They provided a rich summary which communicates not only values detail, and the frame details, but also allowed their evolution along the chronology of different project discussions to be followed. The final values-and-frames process maps respond to and incorporate the need to help visualise and communicate not only the

chronology/sequencing but also shifts in priorities, and how they overlap and influence each other. The particular ways to conceptualise the values, and the frames, and the way that they interact with each other, all had to be co-developed in a kind of 'ecology'; the process was difficult and fraught with challenges. Many different concepts from a range of other fields were considered, and those that were ultimately utilised have been outlined Chapter 3. Thus, the mapping alone is an important output of this research.

The final maps show which problem-frame details/components combined in sequence to influence which values in priority order, that then influenced subsequent decisions comprising decision-frame details/components at each decision stage. They depict all the values details and frames details relevant to each decision stage forming a unit-of-analysis, as retold by participants. Case-maps also provided three higher-level analyses which were central to forming intra-case, inter-case, and cross-group findings in Chapters 4-5 that are integrated in this chapter into principles describing values-and-frames interactions over time. Relational analyses of each unit-of-analysis showed intra-stage influences and possible explanations (maps' bottom rows). Case-level analyses of each variable provided accounts of values' and frames' patterns over time, usefully characterised as decision formation, shift, and change (maps' right-most columns). Intra-case relational analyses described the overall influence patterns of each case and offered plausible explanations (maps' bottom-most right-hand cells).

From these maps it was learnt that together they could be analysed then integrated into basic principles, influence mechanism, and effects (e.g., ES3), discussed in the remaining sections. This means that influence mapping within and across cases can provide useful depictions of variables and their interactions in influence processes to show how they unfold and evolve over time, as shown in ES3 to SS2. Mapping was especially useful because it contributed to identifying basic

principles emerging from such analyses at consecutively broader analysis levels (e.g., ES3b, SS2). Moreover, characteristically similar underlying patterns could be described by the simplified equation provided to distinguish and unify the fundamental principles in ES3. Together, the maps, underpinning principles, and equation are useful to understand values-and-frames interactions, influences, and effects longitudinally. They contributed to finding values influence pathways, then identifying the two most important overall practical findings: key access points in decision-making processes (see below), a useful 'mechanism' and techniques to maximise such opportunities (see §6.6).

6.4.2 Core interactions and influences

Following from §6.3.3-6.3.4 above on what values-and-frames are, this section focuses on the most important patterns of what they *do*. Core findings are integrated on how values-and-frames interact with and influence each other and affect decisions. These interactions rely on the fundamental findings integrated above on 'content' and are therefore closely interrelated.

In all cases it was found that values, frames, and decision-making were interrelated through the shared influential factor of individual, values-based meaning. ES3-SS2 findings showed how sustainability's meaning had various interpretations and was evaluated in the context of specific projects, as first established in ES3a and later shown in context-specific translations through architects' frames in SS1 and SS2c. It was therefore critical to establish how those relationships happened and played out over time as decision-contexts varied. The Exploratory Studies established how each case evidenced a similar pattern of three critical, serially-repeating sequences of interactions which suggested how values typically influence the ways in which sustainability was framed and its meaningfulness established, then how such frames may influence decisions. This 'influence pathway' described how ones' values would influence ones' frames; those frames could influence others'

values; those values may influence others' frames; and so on, in sequence, from problem-framer to decision-maker to problem-framer and so on over time through turn-taking. These core interactions can describe all twenty-six cases and are discussed as follows—each providing the most plausible explanation given the evidence.

On values influencing frames, it was found that architects' interviews regularly showed how they variously evaluated sustainability solutions for framing and deciding in context; and that both their frames and rationales for framing sustainability closely corresponded to their values—and frequently their clients' values. Some architects framed sustainability because they thought it would benefit or profit the client (clients' value), others because it would bring joy to occupants (architects' value), or increase building lifespans (shared value). This showed that e.g., lifecycle frames could communicate individual, values-based meaningfulness of architects to clients and vice-versa. Similarly, both parties' frames repeatedly demonstrated that such rationales implied the framers' expectation that framing sustainability (and deciding) in one way versus another would lead to favourable outcomes/decisions based on their individual values (and architects' understanding of clients' values and needs). These and similar effects were attributed to values motivating/influencing the problem-frames and decision-frames evident from framing and deciding about sustainability.

On frames influencing values, the results repeatedly showed evidence that ones' responses to others' frames varied by how 'compatible' frames were with ones' prioritised values in context, for both architects and clients. More values-compatible frames elicited favourable responses/decisions, and vice-versa. Because frames' content, e.g., on renewables' payback, would communicate sustainability in individually-meaningful ways that related it to values, e.g., valuing cost-savings, these effects were attributed to compatible frames influencing others'

values. Both parties would have needed to interpret frames' values-based and values-linked content, the results of which were evident in their framed responses/decisions because they would recognise the individual, values-based meaningfulness proposed by frames/framed solutions and respond accordingly. This is further supported by evidence that frames' values-based motivational content was understood by clients as varyingly compatible with their values before framing/deciding, based on values' pathway of influence evident from architects' values through their frames to clients' frames bearing close correspondence with clients' values.

On influences-over-time, it was shown how, in response to participants' later challenge-frames, clients' decision-frames expressed values which frequently shifted in quality, characteristics, and/or priority in direct response. The mapped results consistently showed these patterns repeating at each key stage of decision-making, e.g., that earlier client decisions influenced participants' subsequent problem-frames via values, and so on. These effects were attributed to values-and-frames influencing one another in serially-reoccurring sequences unfolding over time, from problem-framer to decision-maker, where decision-frames were the conclusion showing evidence of their sequential influences. Over time, these effects created shifts and changes in decisions, shown in the case-maps as variations in frames subsequently corresponding to the expression and priority of individual values in context, shown mapped as variations in lines connecting earlier and later values, shifting in content and priority in response to the framed decision-problems in each stage.

Exceptionally, later evidence from SS2 showed how in some cases, some frames were compatible with certain values but incompatible with others, accompanied by unfavourable decisions; whereas elsewhere, sustainability was retained even when critical challenges were framed negatively to values/values-based goals. These effects were attributed to not only the values manifesting in prioritised

'clusters' responding to frames, but also the stability and consistency of values clusters varying in response to the problem framed and strength of decision-makers' values systems. Findings showed that when architects interpreted their clients as having stable and consistent values clusters-as-hierarchies, they were better able to predict clients' frame responses and subsequent decisions. This was essential for some participants to identify and maximise opportunities to facilitate more meaningful choices through values-re/framing, discussed below.

Taken together, these basic patterns describe some fundamental interactions and influences of values-and-frames in all cases which would apply to both parties; they therefore could usefully be integrated into some basic underpinning principles. Seven fundamental, interlinked principles underpinning these effects, integrated in Table 116 below, best described the basic patterns of values-and-frames relationships and effects found and clearly confirmed through the case-maps. Most importantly, articulating these principles has helped clarify typically disorderly framing and decision-making processes to identify key 'access points' to leverage such opportunities for more individually-meaningful choices about sustainability—each time frames met values. The principles and access points are critical to understanding frames' effects on decisions via values, and how some participants harnessed them to improve spaces for more meaningful choices through values-based frames, discussed below.

Table 116 Principles of interaction between Values-and-Frames

Principle	Description
P1 Values can influence frames' formulation.	*Values* represent individually worthwhile, meaningful, and important actions, goals, and states.
(Continued below)	*Project decision-making* typically requires evaluating sustainability options, alternatives, and applications for framing and deciding/choosing to achieve at least baseline requirements in context; and it is well-established that evaluating options for decision-making (or choosing) calls on human values to guide and prioritise choices (e.g., Swami, 2013; March, 1994).

(Continued below)

Table 116 (cont.) Principles of interaction between Values-and-Frames

Principle	Description
P1 Values can influence frames' formulation. *(Continued from above)*	*Frames* typically present an evaluative component that communicates evaluations in decision-problem-frames, and decisions in decision frames, where a speaker typically represents (or brackets) a particular viewpoint or perspective to communicate a point, decision-problem, or choice/decision whose pursuit and achievement is compatible with one's values, whether those of the problem-framer/architect or decision-maker/client (see also P2 below). *Values* can motivate or influence frames' formulation because a problem-framer frames a problem in such a way as to encourage action favourable to those values and valued goals or states. The choice of whose values matter in evaluating decision-problems and options to frame is made by the problem-framer and communicated by the frame (via its patterned clusters of frame elements (Matthes & Kohring, 2008) thus recognisable in people's discussions.
P2 Frames can communicate and contextualise values.	*Frames* can communicate values both indirectly (through framed evaluations and decisions) and directly (through values-frames) using e.g., language, phraseology, timing, emphasis that reflect, resemble, correspond to, or are compatible with values, normally speakers' values, but also listener/decision-makers' values (as P1 above). When frames communicate messages that reflect, resemble, or correspond to values, they can communicate *values-based meaning* directly and/or indirectly. In decision-making, both *problem-frames* and *decision-frames* can contextualise values because speakers' frames can translate values' meaning in context through situation-specific language/phraseology/timing/emphasis in ways that represent values contextually (as above). Hence, more abstract human values, such as sustainability-as-a-value, can manifest or instantiate contextually in various forms, including those found here like energy efficiency, human welfare, or balancing green spending and income with long-term impacts. The maps and findings showed how participants understood and described clients' decisions through the frames which clients used to communicate their decisions (i.e., decision-frames). Furthermore, because choices and decisions can rely on values to guide one's selections, and because decisions were always made in the context of a broader-scoped project-frame and narrower-scoped project-stage-frame, and the tightly-scoped decision-problem/solution they are deciding about, project decisions can communicate values (See also Chapter 5, Table 96: Five success factors of values recognition accuracy).
P3 Frames can influence values through meaningfulness.	Based on values' representative component of individual meaningfulness, and frames' purpose to communicate one meaning versus another, frames can communicate to values (figuratively speaking) following the above principles, i.e., indirectly through framed evaluations and decisions, and directly through values-frames using language, phraseology, timing that reflect, link, or respond to speakers' values, thus communicating values-based meaning. Frames can influence values through individual (values-based) meaningfulness—the way sustainability options are framed can connect with decision-maker's values with varying compatibility depending on frames' values-based meaningfulness. One's recognition of frames' meaningfulness can activate or deactivate values in context. So too can such recognition activate values' shift in content, emphasis, and/or priority in response to the framed decision-problems and decision-frames in each stage for both client and architect (see also Chapter 5, Table 96: Five success factors of values recognition accuracy; Table 100: Key themes in values hierarchies; and Table 103: Key themes in Frame receptivity).

(Continued below)

Table 116 (cont.) Principles of interaction between Values-and-Frames

Principle	Description
P4 Meaningfulness can facilitate frames-to-values compatibility.	More individually meaningful frames connect sustainability options with client values by expressing 1) why sustainability matters to clients in values terms, and 2) how sustainability options respond to and fulfil their needs and goals using values-based frames about sustainability—reframing sustainability in values terms can enhance its individual meaningfulness. Frames' meaningfulness can facilitate frames-to-values compatibility as the principal underpinning influence mechanism between architect and client.
P5 Problem-frames can influence decisions through values-based meaningfulness.	Frames, and, more specifically, framed decision-problems (and related options and solutions), can influence decisions by influencing decision-maker's values through communicating individual, values-based meaningfulness (as above). Frames 'worked' with values by communicating sustainability options, solutions, and rationales (i.e., the decision-problem) using values-based language etc. that if chosen (i.e., whose pursuit and achievement) would satisfy or represent compatibility with their values manifesting as valued action, goal, state. Frames-to-values compatibility thus effects, precipitates, or otherwise influences decisions which variously favour sustainability based on the individual, values-based meaningfulness communicated by frames. (See also Chapter 5, Table 103: Key themes in Frame receptivity, & Table 104: Six key factors of values-framing).
P6 Decision-frames can reflect contextually dominant values in prioritised hierarchies.	Values manifested in prioritised clusters via their frames for architects in framing and their clients in decision-making. More specifically, clients' decision-frames expressed contextually dominant values in prioritised hierarchies, which were rarely the same from start-to-finish. This showed that decision-frames can reflect contextually dominant values in prioritised hierarchies. Over time, this also showed that client values in decision-making were shifting quality and priority in response to framed decision-problems. Active and dominant values were interpreted as the principal drivers of their decisions, whereas some values were inactive in those decisions and considered 'deactivated' rather than changed. Thus, *values hierarchies* can vary in internal consistency and stability in context, whilst broadly-scoped *values systems* maintain consistency and stability over longer timespans (see also Chapter 5, Table 100: Key themes in values hierarchies).
P7 Values can naturally create influence pathways via frames to decisions.	Values can create natural pathways of influence via frames which influence the values motivating decisions. More specifically, values can naturally influence frames in sequences repeating serially to form influence pathways over time, from problem-framer to decision-maker via problem- and decision-frames based on values-and-frames interrelatedness through the shared influential factor of individual, values-based meaning (as above). Ones' values would influence ones' frames; those frames could influence others' values; those values may influence others' frames; and so on, in sequence, from problem-framer to decision-maker to problem-framer and so on over time through turn-taking, where decision-frames were the conclusion showing evidence of their sequential influences in any given project-stage (as shown in the case maps). Thus, over time, these effects created shifts and changes in values influencing/motivating decisions.

6.4.3 Significance and implications of Values-and-Frames interactions

As the most significant set of findings, integrating the foregoing fundamental patterns about values influence pathways and frame sequences has begun to provide some indications of ways to characterise principles that explain and provide structure to complex, dynamic, interactive communication and decision-making processes. They provide needed clarity about Values-and-Frames interactions, influences, and effects in deciding about sustainability over time, helping achieve the main aims. The interactions they describe would not normally be as clear with isolated principles remaining disconnected over the landscape and lifespan of project sustainability decision-making, as typically found in dyadic (e.g., values-decisions, frames-decisions) or temporally-limited explanations (e.g., design-only, construction-only) which overlook earlier opportunities or later effects. By using examples from various architect-types and client-types, this research has shown that the shared component of individual meaningfulness could be a critical link between values-frames-decisions about sustainability, which can help architects facilitate better, more individually-meaningful client decisions. The core concepts of values-and-frames interactions and sequencing represented by these underpinning principles are considered to be theoretically saturated for these participants.

This work offers new insights to research on both human values and frames *together,* which typically overlooks their interconnections in interpersonal decisions on contested concepts like sustainability. Research on relations between human values-and-frames tends to theorise their connections (Lakoff, 2010; 2014), or link them as useful tools in reports on behaviour change (Beresford and Sloper, 2008; Darnton and Kirk, 2011; Holmes *et al*., 2011). Empirical research on values, frames, and choice (e.g. Kahneman and Tversky, 2000) typically deals with mental accounting e.g., chance and probability weightings using tangible, numeric

value. This research applied its principles and adds to it by showing the association of human values with formulating then interpreting, evaluating, and/or weighting framed decision options. The findings are commensurate with such research and potentially add to the debate by linking values to frames and decisions through a shared factor of meaningfulness, attributing their influences to the shared influential factor of values-based meaning. The findings also showed how sustainability's individual meaningfulness can be co-constructed in context through values-and-frames interactions, thus commensurate with and adding to conversations on context-dependent constructed choice (Krantz and Kunreuther, 2007) (§2.4.1) by showing potential values-frames-values-decisions sequences. Thus, frames would influence values' contextual instantiation, as shown by differences in values' quality, characteristics, and strength in their application; their activation/ deactivation; and their manifestation and shift in priority and dominance over time.

Findings on both architects and clients' values potentially influencing their frames' formulation are significant because it adds insights to discussions on frames' "formulation effects" (e.g.Kahneman and Tversky, 1984), which typically addresses frames' effects on decisions, but not the processes involved with frames' actual formulation. Findings on the evaluative component entailed by framing and deciding about sustainability showed how values may influence both problem- and decision-frames' formulation. This is a novel application and addition to conversations on Framing Theory (Entman, 1993; Matthes and Kohring, 2008; Cornelissen and Werner, 2014).

Findings on frames activating individuals' internal querying processes followed Query Theory (Johnson *et al.*, 2007; Weber *et al.*, 2007), potentially significant because it suggested that ones' querying could be activated by frames' values-based meaning. It was shown how frames could influence decisions via values by

identifying numerous examples in various contexts of frames that communicate sustainability options and decision-problems whose individual meaningfulness would vary by the compatibility of frames' meaning with decision-makers' values. Most importantly, by linking those fundamental patterns, it was shown that framed options would communicate solutions and rationales that, if chosen, would satisfy or represent compatibility with human values in context, thus also potentially adding insights to closely aligned conversations from behavioural decision-making (ibid., Klotz *et al*., 2018).

Limited empirical research addresses values-and-frames in the context of sustainability (e.g., Arvai *et al*., 2002; Bond *et al*., 2010), but does not address decision-making over time, nor in complex projects. By focusing on dyads like values-decisions (Zhang *et al*., 2008; Martin, 2015; Rickaby *et al*., 2020) and frames-decisions (Shealy *et al*., 2016; Delgado *et al*., 2018), sustainability-related research also typically overlooks the influences of values-on-frames, frames-on-values, and their effects on decisions. Despite research on cascading frame effects (Entman, 2003), values-and-frames interactions and cascading effects in sustainability decision-making are not well-understood; these findings on influence sequences over time add to the debate.

Taken together, the principles underpinning these findings would not normally be as evident without rigorously interrogating and integrating linked findings, the significance of which plays forward in opportunities for improvements. Each principle and their interconnections were therefore important to identifying and potentially maximising and managing opportunities to establish sustainability's individual meaningfulness in practice. Such knowledge may help architects facilitate better, more enduring, and individually-meaningful client decisions by first identifying values, then framing sustainability with values-based language and options that reflect clients' values in the current context. This provides a novel approach to understanding influence patterns found in those practices over time

as processes. These new ideas begin addressing a knowledge gap on their influences in project contexts. They also show it is possible to study both variables together, whereby such approach has produced some interesting evidence that opens new avenues to understand framing and deciding about sustainability.

From this, it was concluded that whilst the interactions and effects of values-and-frames separately and together could constrain sustainability's opportunities, the same principles and effects may also apply to creating and enhancing opportunities to facilitate space for more meaningful decisions favouring sustainability. The duality suggested by these findings—as problems and possibilities for sustainability—are taken up below.

6.5 Pathways for meaningful choices about sustainability

In this section, first, findings are integrated on meaningful choice through values-and-frames, how spaces and opportunities for meaningful choice can be made and maximised or overlooked and spent (§6.5.1-6.5.3). Then, the significance of meaningful choices for project sustainability is discussed and triangulated to existing knowledge(§6.5.4). The effects of values-and-frames on meaningful choice are the second of three most significant cluster of findings, first interpreted and integrated, then discussed in the context of existing research. However, because of its conceptual complexity and depth, key factors on values-and-frames' core relationships with opportunities and spaces for meaningful choices about sustainability are first crystallised to help interpret their connections and significance.

The research showed how sustainability's meaning was being contextually interpreted, values represented what was most individually worthwhile and meaningful, and frames communicated meaning which was interpreted as values-

based. This implied that values-and-frames could play important roles in helping make sustainability more individually meaningful. Meaningful choices may then be more enduring because framed choice options could connect values to decisions. Knowing this, it was considered helpful for practice understand the potential that values-and-frames may hold for unlocking more robust pathways to improve sustainability decision-making via its individual meaningfulness. Such improvement pathways implied considering values' natural influences pathways in architect-client discussions to suggest points at which those discussions could be enriched with opportunity to provide clients with the space to consider their project's sustainability and make choices about it in more individually-meaningful ways. In examining the architect-client decision-making process for improvement opportunities with a lens of values-and-frames, the expectation was to find their role and potential in facilitating spaces for improved sustainability decisions—because facilitating 'spaces' without clients maximising the advantages they provide thus led to misspent potential (because participants spoke of embracing their roles as creators and orchestrators but openly rejected coercion). By examining values-and-frames interactions and effects knowing their interconnectedness through the shared influential factor of meaningfulness—operationalised as more individually-meaningful choices—patterns were thus found on improvement pathways through sustainability decision-making processes. Considering decision-making interactions as opportunities to provide better '*Spaces for Meaningful Choice'* thus offered a useful device for conceptualising, organising, and understanding the possibilities and pathways available for architects to improve project sustainability through decision-making using the principles of values-and-frames to facilitate space for more individually-meaningful, values-based choices.

Three key finding clusters emerged about the nature of, and possibilities for, improving sustainability by facilitating better client decisions are integrated and discussed below. Importantly, these key emergent factors fundamentally

influenced the ultimate conceptualisation and interpretation of the entire research endeavour and are therefore significant to its thesis. First, bearing on existing knowledge of cognitive limitations and boundaries to rationality in decision-making and choice, it was found that the same factors were both limitations and potential opportunities for project sustainability improvements based on their fundamental principles and effects (§6.5.1). Second, whilst it was shown that spaces for making decisions were even more constrained than existing research suggests, importantly, it was also shown that key constraints were accessible human factors which could be unlocked and harnessed more effectively with a composite values-and-frames approach than without in projects (§6.5.2). Third, facilitating values-based and therefore more meaningful choice was key for architects to unlock opportunities for better client decisions through harnessing the effects of values-and-frames based on the shared influential factor of individual meaningfulness (§6.5.3). Whilst most cases showed clients regularly making favourable meaningful choices earlier in projects, shifts in problem-types and frames-to-values compatibilities meant only few cases showed participants following such shifts and reframing sustainability to shifting values priorities to maintain sustainability's favourability. These findings are first interpreted in turn, and then discussed below (§6.5.4).

6.5.1 Boundaries and limitations on meaningful choice

Reflection on map analyses from the first exploratory studies ES1-ES2 initially indicated numerous influences and constraints on individual decisions, which suggested that there was a lack of 'space' for meaningful choice. Findings from ES3a on typical influences and constraints in decision-making confirmed existing research that key cognitive limitations and interpersonal factors normally constrained the space available for architects to help clients make better, 'individual choice by conscious decision'. Hence, 'space for meaningful choice' was

initially characterised (§1.1.1) as an explicit opportunity for some kind of intentionally balanced or holistic consideration of sustainability—but made on individual bases (§2.4). This would involve the problem-framers and decision-makers consciously considering what sustainability means to them, and the significance of how their decisions will affect sustainability.

This research showed that values and frames could separately and jointly create unacknowledged boundaries for architect and client to establish sustainability's individual meaningfulness, explained by varying frames-to-values compatibility (as ES3). This then typically constrained the space available for more meaningful decision-making about sustainability. More specifically, architects' framing sustainability regulations as end-point goals or starting-point thresholds typically would guide clients about sustainability's meaning in their project because e.g., regulations-as-goals would communicate meaning that activates cognitive schema normally associated with evaluation and values, and querying processes, creating initial conceptual anchors with richer responses (as Query Theory). SS1 later confirmed ES3c findings that sustainability's meaning was interpreted using values as criteria to guide both framing and decision-making. This means that when frames communicated to values, they set frequently unacknowledged boundaries to the potential 'space' available for sustainability—goals as lower, thresholds as higher—because potential exists to achieve higher than regulated minimums, shown by several high-achieving project-cases.

The cross-case synthesis shown in Table 117 summarises five principal categories of constraints on decision-making with a '*values-and-frames lens*': individual's inherent cognitive limitations and biases; interindividual communication-frame effects; values as motivators and implied evaluation criteria; values-and-frames through frames-to-values incompatibility via meaningfulness; and context at multiple scales. These constraints were problematic because they narrowed the range available for linking sustainability options to values with frames, thereby

cauterising space available for client's values to emerge and opportunities for architects to then anchor sustainability's individual, values-based meaning.

Table 117 Categories of theorised and found constraints on sustainability decision-making which can be transformed into opportunities with a Values-and-Frames approach

Category	Lens: Constraint/Boundary/Limitation *(Italicised = New contribution ↓)*	Lens: ***Opportunity*** **with Values-and-Frames** *(All new contributions with a lens of opportunity ↓)*
Cognitive limitations, inherent ***Individual's inherent cognitive limitations and biases***	Cognitive limitations:	
	Bounded Rationality (purely rational decision-making is bounded by time and human cognitive processing limitations), (March, 1978)	***Bounded Rationalities'*** **limitations can be mitigated with Values-based rationalities to make more individually-meaningful decisions.**
	Stereotyping heuristic (experience with previous types can constrain nascent choice/ decisions and behaviour), (Beresford & Sloper, 2008)	***Stereotyping heuristics*** **can be re-examined and mitigated by unlocking values compatibilities with frames/reframing in values terms.**
	Prospect Bias (preference for immediate gains can prompt foreclosure on distant futures and distant others), (Tversky & Kahneman, 1992)	***Prospect Biases*** **can be tamed and mitigated with values-based reframing/frames.**
	Query-Memory Bias (e.g., Query Theory; earlier queries can recall richer, thicker memories and responses; later queries can be leaner, thinner) (e.g., Weber & Johnson, 2011)	***Query-Memory Biases*** **can be harnessed to reframe sustainability earlier and more robustly with values-based rationalities and rationales via context-specific values-frames.**
	Cognitive biases, incl. cognitive Framing Bias (quantitatively-identical but qualitatively-distinct language can constrain choice) (Klotz *et al*., 2018)	**Cognitive frames' can be better guided with new values-based meaning.**
Frame effects	Communication frames constrain decision-making (e.g., Goffman, 1974/1986; Kahneman and Tversky, 2000; Shealy *et al*., 2016)	**Communication frames can liberate decision-making when sustainability is reframed for better values connections via meaningfulness.**
	Problem-frames can constrain nascent decision-making via values which can be less compatible with sustainability.	**Problem-frames can encourage better nascent decision-making via values which are more compatible with sustainability, therefore engendering more meaningful choices.**
	Decision Frames can constrain later decision-making by communicating decision-making values which can be less compatible with sustainability.	**Decision Frames can embed more compatible values in decisions, thereby encouraging later decisions that are more compatible with sustainability and therefore more meaningful.**
Values ***Values as motivators and implied evaluation criteria***	Values constrain decision-making as motivators (Cheng and Fleischmann, 2010)	**Values can unlock new motivations which influence decisions when frames link sustainability to values, thereby establishing more individually meaningful motivations to decide favourably about sustainability.**
	Values can constrain decision-making as implied evaluation criteria.	**Values can unlock new evaluation criteria when sustainability frames link sustainability to values.**
Values-and-frames	*Values-and-frames can constrain decision-making through frames-to-values incompatibility as meaningfulness.*	**Values-and-frames can transform decision-making through frames-to-values compatibility as values-based meaningfulness.**

(Continued below)

Table 117 (cont). Categories of theorised and found constraints on sustainability decision-making

Category	Lens: Constraint/Boundary/Limitation *(Italicised = New contribution ↓)*	Lens: ***Opportunity*** **with Values-and-Frames** *(All new contributions with a lens of opportunity ↓)*
Context ***Context or setting at multiple scales*** *Interindividual communication-frame effects*	Context constrains choice construction (Tversky and Simonson, 1993; Krantz and Kunreuther, 2007).	**Context provides new opportunity to link values to sustainability choice options more compatibly with values-based meaning via frames/reframing decisions' impact in context.**
	Broader project-scale 'value frame' (Mills, 2013) found here as '*value-frame'-as-context* can constrain sustainability decision-making by over-valuing current goals which are broadly unsustainable when viewed with a wider lens.	**Broader project-scale 'value frame'-as-context can guide decision-making when project deliberations are opened up to longer-term impacts and effects of decisions with a values-and-frames lens on sustainability.**
	Broader project-scale '*values-frames'* as context can constrain decision-making (negatively).	Broader project-scale '*values*-frames'-as-context can guide decision-making more positively towards sustainability as a more socially-beneficial outcome.
	Tighter discussion-scale 'values-frames'-as-context can constrain decision-making when current goals are overvalued & unsustainable.	**Tighter discussion-scale 'values-frame'-as-context can unlock more meaningful decision-making.**

Knowing this, considerations on improvements as antidotes became clear when searching decision-making processes for improvement opportunity with values-and-frames—thus pregnant with possibility. Examining each constraint, limitation, or bias with this lens showed the same constraining factors could be harnessed to create opportunity and facilitate better, more individually-meaningful choices about sustainability. Key factors are captured and summarised as categories of prior-theorised and newly-found constraints on sustainability decision-making—which importantly form opportunities when viewed with a Values-and-Frames Lens in Table 117. By conjoining values-and-frames, new possibilities can be unlocked and constraints reduced with a plethora of chances to spot decision-makers' values and reframe sustainability in values-based terms—thus potentially creating opportunities to provide more helpful spaces to frame and choose sustainability more individually-meaningfully. This means that values-and-frames in decision-making represent a rich landscape of predominantly unacknowledged challenge *and* opportunity. Knowing these constraint-opportunity pairings, such spaces and opportunities are considered below.

6.5.2 Spaces and opportunities for meaningful choice

Given the numerous constraints and potential opportunities for meaningful choice, a gap and need emerged to understand which spaces were key and held the most potential for helping clients improve decisions about sustainability. Because ES2 showed that decision 'landscapes' evolved and earlier decisions overturned, knowing about key choice-spaces and opportunities to provide them would be useful to help architects understand and manage why and how, because neither these factors nor the role of values-and-frames are well-understood.

Study ES2 showed that two key, existing choice-spaces were critical to establish and manage sustainability's individual meaningfulness: 'initial design problem-solution space' and later 'critical challenge space'. Such choice-spaces were bounded by architects framing/reframing sustainability and clients' responses indicating the extent of their 'values landscape'. Spaces were constrained when decision-problems were framed incompatibly with any values, or were compatible with low-priority or deactivated values. Study-part ES3b connected those two spaces to show that values would form influence pathways through available choice-space from initial architect-client contact through to 'final decisions', expanding or constraining the available choice-space. Harnessing values' influence pathways via frames would create opportunities-as-spaces for meaningful choices through the values-based meaning communicated by frames based on frames-to-values compatibility.

Evidence from Study SS1-SS2 confirmed ES3b-ES3c to show that opportunities for meaningful choice both existed and were created through frame effects on and via values—more specifically, when frames connected with values e.g., using values-compatible language and phraseology. Thus, many architects showed opportunities were created when they were values-listening then framing/reframing to those values. Making frames-to-values interconnections via

compatibility therefore provided plentiful 'meaningful-choice opportunities'. Although the most opportunities to establish sustainability's meaning existed earlier in projects, many 'meaningful' choices were made but later overturned when values priorities shifted in response to newly framed decision-problems calling on different values clusters to guide both framing and decision-making. Maximising such opportunity was critical for improving their projects' sustainability outcomes because spaces for meaningful choices were so constrained and shift longitudinally. Importantly, SS2 confirmed that some architects were seeking and maximising opportunities for more meaningful choices through heeding, framing, and reframing to evolving values priorities. This showed that such heedfulness can be helpful to manage—or structure—choice-spaces through establishing and maintaining sustainability's individual, values-based meaning over time. For some participants, knowingly harnessing frames' effects on values therein had maximised the available opportunities to create spaces for more meaningful choices. Thus, despite the constraints, many opportunities existed; some were taken, many were spent, but some were maximised throughout decision-making when participants adopted a values-based framing approach; see §6.6.3.

6.5.3 Meaningful choices

Given the limitations and opportunities identified, to help clients make better decisions and improve sustainability outcomes, a gap exists to understand meaningful choices with a values-and-frames lens. Evidence from Study ES3b-ES3c attributed frames effects on decisions via values to a unifying influential factor of meaningfulness, thus linking values-frames-decisions. Study SS1 showed how several variations of architects' frame options could link individual meaning to clients' decision/choice options via their values with varying success based on architects recognising clients' expression and priority of values in context. Evidence from ES3c confirmed in SS1 that the most meaningful frames concerning sustainability were highly likely to be those aligned or compatible with clients' values, regardless of whether those values were readily apparent. SS2 confirmed

that some architects would subjectively link decision-makers' values with longer-term sustainability outcomes in contextually enduring ways—through subjectively-responsive framing/reframing of sustainability issues in values terms.

Three things were concluded. Frames communicating sustainability's values-based meaning were potentially the most meaningful and choices made from values were typically more individually meaningful, captured by the concept of meaningful choices. Meaningful choices can thus embed more enduring motivations by linking decisions to values, thereby enduring change over time. It was therefore concluded that values-based frames of choice options may unlock more enduring motivations to consciously choose and retain sustainability for their own individual, values-based and therefore more powerful, reasons. Thus, identifying decision-makers' values and formulating values-based frames would empower them by enabling more enduring motivations to consciously choose sustainability for their own individually-meaningful, enduring reasons. This suggests that by adopting a values-and-frames approach to decision-making, architects could improve their chances of helping clients make more individually-meaningful choices about sustainability, implying such an approach may therefore be critical to project sustainability outcomes because meaningful choices would clearly link decisions to values; those consistently linking to dominant values were those most capable of enduring change over time.

However, in both existing research and practice, the values-and-frames link to creating opportunities for meaningful choices remains overlooked or underappreciated, and therefore also may contribute to project sustainability reductions. Knowing this, the landscape for meaningful choices is discussed below.

6.5.4 Significance and implications of meaningful choices about sustainability

These findings were interpreted as establishing the basis of meaningful choices and the significance of values-and-frames as both creating boundaries and providing factors which can be harnessed towards sustainability improvements. This means that patterns of successful interpersonal decision-making can be traced as co-constructed meaning-making through values-and-frames sequences to final framed choices as outcomes of decision-making processes. However, in both existing research and practice, the values-and-frames link to identifying, creating, and maximising opportunities for meaningful choices remains overlooked or underappreciated, and therefore also may contribute to project sustainability reductions. Mapping and tracking the same underpinning patterns through decision-making pathways in twenty-six cases has revealed where, empirically, current opportunities for meaningful choice occur in architect-client discussions: each time frames met values. More importantly, some architects consciously maximised their opportunities through values-listening and values-based framing. Knowing this, professionals can better calibrate their sustainability option frames by listening for and framing to decision-makers' values. The core concepts of values-and-frames roles in facilitating opportunities and structuring choice-space are considered to be theoretically saturated for these participants.

The findings add new insights to existing research on meaningful choice, which typically examines consumers trading-off hedonic and 'meaningful' choices (Aaker, 2014) but overlooks values-and-frames affecting choices about sustainability. Values-and-frames together provide new insights into this potential pathway to facilitate more meaningful choice, which is not well-understood. Current research on managing decision-making-as-choice tends to be quite varied, looking at various pathways to better decisions (Harris *et al*., 2017; Johnson *et al*., 2012), or specific by looking at single pathways (Shealy *et al*., 2016; Delgado *et al*., 2018) to

'nudge' choices or structure decision 'environments' for improved outcomes (Thaler *et al*., 2010; Marx and Weber, 2012). Whereas no empirical research currently combines these two fundamental pathways. This research suggested two foundational pathways of values-based decision-making and choice structuring about sustainability through framing/reframing in project decision-making processes over time. These findings show how converging values-and-frames not only produced novel findings but also presents a potentially useful approach to decision-making in practice by conceptualising sustainability decision-making processes as 'spaces for meaningful choice'. The concept coincidentally also exists in research on community-based resource management (Lindsay, 2000) and democratic choice (Reiner, 2020), where values-and-frames' potential are overlooked.

Having adapted the Potschin and Haines-Young (2008) concept of choice-space to project sustainability decision-making contexts, these findings add values influences on framing in interpersonal decision-making processes. The findings suggest choice-space—the locus of meaningful choice—may be conceptualised as having boundaries which are co-discovered over time through values-based framing, thus adding to related research (Shealy, 2016; Delgado, 2018; Klotz, 2018) which underappreciates values' significance. Conceptualising values influence pathways through linked choice-spaces permits a new way of viewing project decision-making, characterised explicitly as the product of values and frames representations as discussion 'content'; and their roles, relations, interactions, and sequencing as a process, thus applying and extending related research (Weber and Johnson, 2006) into new context. With this approach, frames' impacts on sustainability decisions were traced through their effects, from specific values-and-frames instantiations and interaction sequencing to novel insights about general principles.

By considering that values influence pathways via frames could also explain decision-making behaviour over time, frames effects on values may be conceptualised as values-and-frames interactions and harnessed to structure decision-making behaviour through values-based framing. Frames-to-values compatibility through meaningfulness increased the likelihood of successful values-based framing, evidenced by client decisions favouring sustainability. This may extend existing conceptualisations of choice structuring as modulating decision environments in which contexts inform decision-inputs and presentation (Shealy, 2016; Harris, 2017; Delgado, 2018). Adding to such debates, it can be concluded that these findings resemble a values-based choice structuring which converges fundamental principles of two foundational factors: *framing* as how sustainability decision inputs are presented, *values* as what decision inputs can link with, together which influence the quality of choices, and individually-meaningful choices as aims and outcomes.

6.6 Values-framing and Values-frames

Known and unacknowledged interpersonal constraints on framing and deciding meaningfully about sustainability may contribute to limiting opportunities to improve project sustainability. Hence, a gap exists to understand how professionals can i) overcome such constraints to help clients consider and make more individually-meaningful choices about sustainability and ii) formulate sustainability choice options which are more attuned to client's values as key drivers. This implied systematically considering specific choice options in architect-client discussions and how opportunities can be harnessed for more individually-meaningful choices about sustainability. However, sustainability choices and opportunities are not normally researched from the perspective of framing individually-meaningful choice options with a values-and-frames lens. By studying frames' effects on decisions via values, it was later envisaged to identify substantive patterns of how participants typically encounter and overcome

constraints on meaningful choice about sustainability. This was demonstrated through the twofold search for any values-based frame options and effects (SS1), then any critical factors and broader patterns in participants' experiences of making and maximising opportunities to facilitate (spaces for) clients' meaningful choices about sustainability as potential viable routes to improvement through values-and-frames (SS2).

Values-framing techniques and values-frames as a mechanism emerged as the third of three most significant clusters of findings. They are first interpreted and integrated, then contextualised with existing research. As the most significant practical finding on potential sustainability improvements, values-frames emerged as potentially core mechanisms of, and values-framing was a vital tool in, participants' managing sustainability through decision processes.

This section integrates insights first on what 'values-frames' are and do (§6.6.1-6.6.2); then how they are formed through 'values-framing' (§6.6.3), both derived from the search for values-and-frames influences. Integration of 'values-frames' builds on the useful frame options that were effective with clients based on their values interpreted in context. Similarly, integration of broader patterns in participants' framing approaches are interpreted last (§6.6.4), followed by triangulation to existing literature (§6.6.5).

6.6.1 Values-frames: Effective frames worked with values in context

Based on the principles established in ES3, studies SS1-SS2 of frames' effects on decisions via values led to several important findings. Examining case-maps for patterns in relationships between participants' frames, clients' values, and subsequent framed decisions repeatedly showed several important patterns.

The relative effectiveness of participants' sustainability frames in eliciting favourable decisions typically varied directly in relation to how well they 'worked' with clients' values. Clients typically expressed their prioritised values through their frames of e.g., client requirements, instructions, etc. Architects' framed decision-problems which revealed an association of sustainability with clients' values would effect more favourable decisions, whereas some effects of other frames with values conduced unfavourable decisions. Evidence from Study SS1 on useful frame options extended ES2-ES3 to demonstrate how the most effective frames connected decision-problems to sustainability options/solutions with values when framed using language/phraseology/timing that reflected, linked, or responded to decision-maker's values thus communicating values-based meaning.

Some participants reframed otherwise meaningless propositions (e.g., GSHP) or values-neutral sustainability options in terms of individual values, thereby creating more individually-meaningful choice options, demonstrated by relative strength of influence of frames' content and their effects on decisions. When participants successfully associated sustainability with individual values, this was attributed to 'frames-to-values compatibility', evidenced by favourable decisions and clarity of values influence pathways. Numerous examples of sustainability frame options were found whose varying effectiveness to facilitate favourable decisions was attributed to frames-to-values connections. This effect looked like an interesting manifestation of what can be called 'values-frames'. However, their effects were not uniform throughout project chronologies.

6.6.2 Values-frames: Effects in key phases

Findings from G2-G3 in SS1-SS2 showed that clients responses to earlier-framed choice options, e.g., of benefits and needs-satisfaction, in initial 'problem-solution spaces' revealed they were most compatible with predominantly more aspirational values and their priorities, such as 'Pragmatic Sustainability; Future-Proofed;

Long-term commitment'. This was attributed to projects at early-stages typically remaining intangible and choice effects unclear. Initially-framed sustainability in terms of e.g., context-specific benefits to clients and fulfilling statutory requirements, were all typically effective at connecting with highly-frequent responsibility-type values for decisions favourable to sustainability. These effects were attributed to frames influencing decisions through values-based meaningfulness.

Mapped discussions showed that client responses to later frames of critical challenges in 'challenge spaces', e.g., 'tenders were higher than expected' typically revealed negative but more enduring values priorities, such as 'Fulfilling needs but not at any cost; Not sustainability but profit', which ran counter to both participant and researcher expectations. This effect was attributed to two factors. First, critical challenge frames potentially activated or 'resonated with' values of differing characteristics than those expressed earlier. Second, because projects became increasingly tangible and choice effects clearer, expressed both implicitly and explicitly by participants. Thus, such later, recalibrated values were predominantly pragmatic values-types with commercial and residential clients, with exceptions from third/public-sector clients whose values priorities almost exclusively concerned socially-focused aspirational values-types—yet they all responded to challenge-frames uniformly. Numerous cases showed how later challenge-frames activated these different values priorities, eliciting unfavourable sustainability decisions. Frames of e.g., significant planning objections, prohibitive or excessive costs, and critical funding challenges all communicated risks to achieving goals based on newly-activated values priorities. Findings also showed examples of e.g., long-term savings or marketability frames connecting with lower-priority values for unstable decisions. Case-maps regularly showed earlier values-based decisions were later overturned because higher-priority, but less favourable values were contextually-activated by e.g., challenge-type frames. This suggested

that values-compatible frames were least effective with lower-priority, shifting, and secondary/tertiary values.

Interestingly, SS1-SS2 showed how values-compatible frames were most effective on 'final' sustainability decisions (and therefore sustainability outcomes) with highest-priority, enduring, and therefore dominant decision-making values. Thus, because problem-frames communicated sustainability's values-based meaning, they were more individually-meaningful; because decisions could be made from—i.e., motivated by—values, they can be more meaningful. Exceptionally, when architects interpreted their clients having *both* internally-consistent values clusters and stable values priorities over time, most values-frames were successful. This was attributed to those clients having strongly-held values systems, demonstrated in five SS2 case-maps (stable horizontal lines).

Although some decisions were unfavourable to sustainability, they were made from values and therefore meaningful. Across many cases, values-framed options that were both individual-values-specific and context-specific typically elicited meaningful choices sometimes unfavourable to sustainability. It was concluded that values-based decisions, i.e., those architects interpreted as made 'from' values, were meaningful choices, but not all meaningful choices were favourable to sustainability. The extent of decisions' individual meaningfulness would vary by the priority of values in an individuals' broader-scoped values system, therefore allowing that all values-based decisions are meaningful, but some are more meaningful than others because of values' priorities. This means that identifying and framing to the values clients 'bring' and those contextually triggered and/or reprioritised by frames could be critical to predicting and better-structuring the space for client's decision-making to be more consistently and enduringly favouring sustainability through values-framing to contextually-dominant values. Choice options framed to be more values-compatible would expand available

choice-spaces by unlocking new values-based motivations to pursue more sustainable designs.

6.6.3 Values-framing in decision-making processes

By looking for contributing factors to 'values-frames' effectiveness, evidence from ES1 and ES2b was confirmed in SS2a-SS2b showing how architects would understand and work with client values. This was demonstrated by two principal factors of accurate values interpretations (e.g., values recognition-clarity-compatibility-consistency) and frames-to-values compatibility contributing most to clients' values-frame responsiveness. When participants were more values-aware, they were more effective at re/framing sustainability to reflect or link with their clients' values. This process looked like an interesting approach to what can be called 'values-framing'. SS2c findings showed that together these factors typically supported better values-framing and potentially aided decision predictability.

Findings also revealed that participants were using values-frames with varying awareness and effectiveness. Study SS2a found that the accuracy of architects' values interpretations contributed to the effectiveness of their frames in eliciting favourable decisions. More accurate values interpretations provided stronger lines-of-argument and anchors to connect values-based meaning with dominant values through values-framing. When participants accurately interpreted clients' values then re/framed sustainability in values terms, client decisions favouring sustainability increased, and vice versa. Explicitly acknowledged by two participants, this was first evidenced in their case-maps, then found repeating with others to varying extents. Evidence from ES3b-SS2c together conclusively showed how framing more individually-meaningful, values-based choice options helped facilitate clients' meaningful choices about sustainability—effects attributed to accurate values-framing.

However, SS2c maps and findings showed that whilst many participants' frames evidenced them heeding clients' values' priorities in some instances, very few participants would heed values' content and priority shifts over time as projects developed and decision-problems shifted from aspirational to problem-solving and challenge-resolving. Those doing so seemed better able to predict decisions through client responses to their problem-frames, demonstrated in case-maps by repeated frames-to-values connections and consequent decisions favouring sustainability longitudinally. Taken together, this suggests that successful values-framing to contextually-dominant values could facilitate improved, more meaningful sustainability decisions, as shown when architects accurately recognised values and harnessed frames' effects on decisions via values, then heeded values shifts and appropriately reframed sustainability decision-problems in context, thus facilitating meaningful-choice-space.

More importantly, this also suggests that when architects framed sustainability to be more values-compatible, it was highly likely that they were unlocking clients' values-based motivations to pursue more sustainable designs as the most plausible explanation. Knowing this, values-framing could be a useful technique because it may help architects better structure decision-making processes to first determine values then frame sustainability more meaningfully, and later maintain awareness of later shifts, thus empowering their clients' more meaningful choices—a skill found to have been used in seven cases, and typically intuitively and unknowingly and clearly without any explicit structure, framework, or procedure.

Thus, this research shows how and why values-framing is a useful technique: for formulating more individually-meaningful choice options, with values-frames as the 'mechanism' useful to unlock more enduring motivations to choose sustainability for individually-meaningful reasons. Together this suggested the pair of concepts were helpful to describe how participants were making and maximising opportunities for project sustainability improvements through

facilitating their clients' values-based meaningful choices, with techniques considered below.

6.6.4 Broader patterns in framing approaches

Early evidence of broader-scoped patterns in the ways that architects undertook or approached framing sustainability in decision-making suggested some characteristics which may be usefully considered as *framing approaches*. Such strategies for framing both to and from values suggested an interesting way to consider how architects typically approached their client and stakeholder engagement, which may be useful for practitioners to help create and maximise opportunities and spaces for more individually-meaningful sustainability choices.

In Study ES1, it emerged that when architects raised and discussed sustainability towards decisions with clients, they would apply rules-of-thumb or heuristics about how best to formulate and frame issues with certain clients to achieve goals, guided by their values. It was first thought that architects' approaches to framing sustainability varied by their approach to architecture more generally. It was later thought in ES2 that these framing approaches were based on judgements of clients, formed during their first encounters with each other, and then adjusted to client's emerging needs and preferences. Approaches of design-led architects tended towards 'pulling together from the front towards higher standards' with regulations framed as minimum-thresholds, whereas commercially-led architects tended towards 'pushing from the back towards minimum standards' with regulations framed as goals.

Given their potentially broad-ranging, stage-setting nature, such heuristics could limit the available space for clients to choose sustainability more meaningfully. In Study SS2, architects' framing patterns were examined to understand the roles of values-framing over time in facilitating decisions favouring sustainability. A

typical strategy was to Listen-Ask-Propose then create lines-of-argument from interpreted needs and values to potential solutions. Such values-framing approaches were found across multiple design- and sustainability-led participants and cases, then compared with commercially-led cases. Empirical examples taken from those interviews showed several main values-based approaches, shown in Table 112-113, §5.3.4.2. Nine alternative, predominantly non-values-focused framing approaches (Table 114) were also being used by some architects, suggesting that non-values-specific framing was used to communicate sustainability which can variously connect with values, or not. Several architects' strategy was to make experience-based recommendations with statutory justifications e.g., planning restrictions or minimum code requirements. That comparison broadly confirmed the initial considerations, but with some cross-overs where two values-astute commercial architects shared approaches with design and sustainability groupings and consistent with architects' values findings (§6.3.3). This suggested that values-framing was already used as an important technique to facilitate, enhance, and manage meaningful-choice-spaces.

These approaches' presence and type was consistent with variations found in frames connecting compatibly with values regardless of priority or dominance (meaning they were successful). Whereas architects without values-focused approaches were typically less attentive than their values-heedful counterparts to their client's values longitudinally, again evidenced in case-maps by clients' reduced receptivity to framing and demonstrated in less-favourable decisions. Taken together, this suggests that values-based framing approaches are more likely to achieve lasting, meaningful choices (thus enduring challenge) than values-free approaches. Successful values-framing approaches may also contribute to increased client satisfaction because meaningful choices were linked to individual values and potentially more satisfying in their achievement.

Existing strategies to values-framing over time may provide useful heuristics to both mobilise and manage spaces and opportunities for values-based choices longitudinally towards sustainability improvements through more individually-meaningful, values-based frames. Taken together, the approaches identified in §5.3.4.2 can provide useful values-based framing techniques which may help practitioners facilitate better, individually-meaningful choices and potentially improve overall project sustainability with a likely increase of client satisfaction.

6.6.5 Significance and implications of values-framing and values-frames

As the most practically significant set of results, integrating findings around frames' effects on decisions via values over time has begun to provide some indications of ways to characterise a mechanism, techniques, and approaches found in architects' values-based sustainability framing. These could be useful for practice because they showed how some architects heeded clients' values and framed sustainability specific choice-options more attuned to client values. Having shown that values-and-frames interactions typically created shifts in decision landscapes towards degraded sustainability, some architects created more space for client's individually-meaningful choices by harnessing useful values-based framing techniques and maintaining favourable decisions by consistently values-framing to dominant values.

More importantly, values-based framing appears capable of overcoming some interpersonal constraints to help clients consider and make more individually-meaningful choices about sustainability, thereby increasing and maximising opportunities for sustainability improvements. Through values-framing, many architects enabled and actioned opportunities to facilitate more meaningful choices for their clients through values-and-frames-based choice-space enhancements. However, too few did this knowingly to consistently maximise the

potential of values-framing effectively over time. Limited but important evidence of values-frames, values-framing, and framing approaches showed few participants using them to protect and manage spaces for meaningful choices. This indicates a need to enhance professionals' sustainability competencies with new values-based insights about non-technical, interpersonal factors such as those revealed here. These first ideas about some dynamics and techniques of values-based framing and effects on decisions begin to fill a gap/need to know how practitioners' existing techniques have helped them manage interpersonal interactions towards meaningful and enduring choices that improve project sustainability and may enhance client satisfaction. Knowing this, further knowledge of similar techniques over time may continue looking at how professionals use values-framing approaches over time and their effects.

These findings potentially add to discussions on the act and consequences of framing by bringing a values-and-frames composite approach. Values are not well-understood in framing research, nor in projects over time. This research adds new insights to under-researched conversations about 'value-framing' (Ball-Rokeach *et al*., 1990); framing as a way to communicate news/messages with a values angle or having relevance to groups with certain values (Nelson *et al*., 1997; Shen and Edwards, 2005; D'Angelo, 2011); or engendering thoughts for/against policy issues (Brewer and Gross, 2005). These findings and their integration thus add a conceptualisation of values as the foundation of, and link between, framing as decision/choice communication, and decision-making. This specifically adds new insights from the perspective of enhancing sustainability choices, their formulation, and framing with the shared influential factor: values-based and therefore individually-significant meaning.

Values, framing, and decision-making have been conjointly examined elsewhere but remain contextually-limited given these findings that values-and-frames influences contextually manifest. Moreover, using individual's perspectives on

interpersonal project sustainability decision-making over time, this research potentially extends similar ideas elsewhere, e.g., media effects on student voters' values (Shah *et al*., 1996); framing binary give-get value trade-offs to child seat consumers (Krishen *et al*., 2016); environmental valuation and effectiveness frames in deciding about a regional sustainability assessment frameworks (Bond *et al*., 2010). Shah (1996) implied a relational mechanism and sequencing when political issue frames interact with students' values which may motivate ethical judgements thus inform candidate choices. Yet, importantly, the values-based motivations activated by manipulating classroom newspapers, anonymous child seat questionnaires, and large-scale regional frameworks are likely to vary sufficiently in at least quality, context, and tangibility compared to architects' interpersonally framing sustainability options for face-to-face client decisions on the buildings they procure and occupy. This research adds to such debates with new context-specific insights on a plausible mechanism, useful options, techniques, and approaches to values-and-frames sequential influences and effects longitudinally in real-world project contexts about sustainability.

This work adds new insights to an emerging conversation that shows the particular importance of framing individually-relevant choice options amongst other behavioural factors in structuring better choices in project sustainability decision-making (cf. Harris *et al*., 2017; Shealy *et al*., 2019). However, the role of individual values, context-specific frames, values-and-frames interactions through values-framing in interpersonal decision-making is not well-understood in existing considerations of framing AEC sustainability. This research expands such conversations with novel findings on values-and-frames' fundamental principles by showing some useful potential applications in values-framing, and potentially useful values-frame options and approaches. As such, to increase confidence and empower improvements (Mills, 2013) in sustainability decision-making and its

outcomes, values-based framing could contribute by communicating its' individual, values-based meaningfulness.

These findings were interpreted as a useful values-based framing mechanism, techniques, and approaches which could help architects facilitate more individually-meaningful choices to improve project sustainability. With these approaches evidenced across multiple cases, this means that values-framing is already used as an important technique to create, enhance, and manage meaningful choices, albeit frequently unknowingly and too infrequently to effect sustained improvements. Taken together, this means that, with greater understanding, values-based framing would be more likely to achieve lasting meaningful choices—capable of enduring challenge—which may contribute to increased client satisfaction because meaningful choices would be linked to individual values and potentially more satisfying in their achievement. These core concepts are thus considered to be theoretically saturated for these participants.

6.7 Summary and significance

This research presents a novel approach to studying influences in decision-making over time with a composite values-and-frames lens to generate some novel insights on their interactions and effects with the aim of improving current practice in sustainability decision-making in architect-client discussions in architectural practice. Individually-meaningful choice provided a way to understand and harness values-and-frames when deciding about sustainability, because values, frames, and decisions can be linked through the unifying influential factor of meaningfulness, manifesting most usefully as values-based meaning. Although the space required for individually-meaningful choice was lacking, opportunities existed to heed and harness the very mechanisms potentially responsible for setting some artificial boundaries to choice-space. Using this approach, framing and decision-making processes were examined to

unravel their layered contents and characteristics, interactions and effects, potential room for improvement, and a values-based framing process and mechanism describing how opportunities to improve individually-meaningful choices could be overlooked and spent, or made and maximised. The effects described would not normally be as clear with isolated principles remaining disconnected over the landscape of project sustainability decision-making. Together, the work provides an interesting perspective and approach to studying influences in sustainability decision-making over time.

Sustainability has provided a unique problem-set, because its meaning is contested and requires evaluation for its localised application in projects through framing and deciding. The suggestions on some underpinning principles may help explain how and why seemingly ordinary interactions can not only limit and constrain sustainability decisions, but also enhance sustainability's individual meaningfulness and structure potential opportunities for improvements. However, values-and-frames influences can both negatively and positively affect the individual meaningfulness of sustainability as valued choice options in context. By showing that values can create pathways of influence via frames to decisions, they begin to offer one plausible explanation of how sequences of framed statements would create, shift, and change decisions over time.

The research provided ample evidence of how framing various sustainability interpretations and applications would impact the values associated with evaluations communicated through framing and deciding about sustainability, which were rarely the same from start-to-finish. Some participants successfully harnessed these effects through values-framing to create opportunities that enhance and maintain meaningful-choice-spaces for sustainability which improve on both baseline regulations and traditional, transactional decision-making. Yet most participants typically did so unknowingly, underappreciating not only the

underpinning principles and effects, which meant missed opportunities to elicit values then values-frame for individual meaningfulness. Taken together, it can be concluded that the composite values-and-frames approach was useful to study interactions and effects to create and enhance opportunities to help clients make more meaningful decisions favouring sustainability. Meaningful choice emerged as a useful unifying concept whereby values-and-frames find purpose and application in facilitating meaningful choice beyond explaining interactions and effects. A final cross-case review determined there were no obvious unexplained exceptions (Glaser and Strauss, 1967), with alternative explanations examined in Appendix-6.1 to close the loop on validity and reliability.

Chapter 7 Conclusions

7.1 Chapter introduction

This chapter begins with a reprise of the original intentions and broad outcomes. The contributions to knowledge are then summarised, followed by evaluations and reflections. An assessment of research limitations is followed by recommendations for future research and practice, after which the work is concluded with main messages for interested parties.

The aim of this research was to respond to a need initially identified in practice and knowledge gap subsequently distinguished: to understand the human factors influencing how architectural projects can achieve improved levels of sustainability, whether as initially envisioned, tacitly or explicitly, through decision-making; and any existing or potential opportunities for improvement. With literature establishing their separate potential, the objective was to understand: i) how values and frames interact in and ii) influence project decision-making about sustainability; then iii) how those interactions affect the opportunities for improvements to project sustainability, later conceptualised as '*opportunities to create more space for meaningful choice'* as a key emergent factor.

The sustainability concept and endeavour is inherently interdisciplinary (Schoolman *et al.*, 2012); the research therefore necessarily bridges boundaries—including epistemological 'field-levels' and methodological 'analysis-levels'; and converges disciplines—specifically individual perspectives on interpersonal decision-communication (frames/framing), (values-based) decision-making, and their processes over time in projects—hence bridging individual- and interpersonal-levels of communication, motivation, decision, and management. The research is therefore technically and conceptually complex. This was necessary and justified precisely because in projects involving sustainability, both problem-framing and decision-making involve thinking, evaluating,

communicating, and acting, between people and individually in complex, dynamic, evolving real-world contexts.

The lack of existing methods and procedures to study both foundational variables—values and frames—concerning contested concepts—sustainability—in a complex, dynamic, interactive, and temporally-extended process—project decision-making—meant that the exploration phases were longer and required more depth than anticipated. The work fruitfully yielded several emergent and therefore unexpected factors. The case-based grounded research approach was successful in facilitating inductively-derived patterns grounded in and emerging from the data (rather than deductively-testing pre-formed hypotheses). It was based on Thematic Analysis and supplemented with additional methods of relational and experience process analysis and mapping, alongside the development of a new technique for multi-variable influence mapping over time based on the retrospective interviews of key expert informants on values-and-frames influences in decision-making processes from their perspectives.

Thus, if sustainability is considered as a worthwhile goal and state to achieve, then AEC projects are considered the 'landscape' within which sustainability manifests in recognisable contexts through decision-making and choice behaviour as the 'channel' to establishing sustainability in projects. Better values-based framing becomes the route to interpret sustainability's individual meaning in a 'decision environment', values are the key to unlocking decision-making 'channels' with better interpretations for more individual, contextualised meaning; values-and-frames interactions creating pathways of influence through 'sustainability choice-spaces' to provide the locus and boundaries within decision-making processes for more individually-meaningful choices to be considered.

7.2 Contributions

In the context of research on decision-making that affects sustainability in architectural projects, this work makes five contributions to knowledge of: (1) a composite values-and-frames approach; (2) a novel influence mapping method; (3) values' manifestation and effects via frames in sustainability decision-making; (4) framing and frames' formulation and effects on values and sustainability decisions; (5) managing values-and-frames in sustainability decision-making processes over time. The overall contribution to knowledge described below is comprised of six primary insights (Table 120) described by these categories below.

7.2.1 Composite *Values-and-Frames* concept

This research has begun to show Values-and-Frames is useful as a composite concept. It contributes new insights towards to filling knowledge gaps in decision-making about sustainability in architectural projects because it provides a new way to think about, research, and understand deciding about sustainability as a contested concept. By bridging these variables with a composite concept, this 'convergent' idea was developed to study values *and* frames separately and together as significant factors in influencing and facilitating decisions from architects' perspectives. The Values-and-Frames concept can capture and describe the two variables and what they do in sustainability decision-making over time. This is a contribution because no research currently does this, nor conceptualises or applies the composite concepts as demonstrated throughout this research.

More specifically, using this concept as an approach led to new sets of preliminary insights. First, on values and frames' roles, relations, interactions, influences, and effects in decision-making which showed they are fundamental to sustainability decisions (see Studies ES2/§4.3-ES3/4.4). Evidence was found on how both architects' values as 'problem-framers' (ES2b, MA2; §4.3) and clients' values as decision-makers (ES2b/§4.3.2-ES2c/4.3.3) can influence project decision-making

processes and be integrated into decisions through their communication frames (ES2-ES3). Findings showed how framing and reframing sustainability can make it more individually-meaningful and therefore compatible with clients' values in prioritised hierarchies (ES3b/§4.4.3; SS1/§5.2; SS2c/§5.3.4). Because projects and decisions are subject to shift and change, the approach was useful as it showed how values-framed and values-based decisions are less likely to be overturned and therefore potentially more enduring when critically challenged.

Second, on how values-and-frames interact and affect opportunities and spaces for more meaningful choices about sustainability. Evidence showed how spaces for meaningful choice were both constrained and created through frames' effects on values—specifically frames-to-values compatibility (ES3/§4.4-SS1/§5.2). Importantly, findings showed how known and newly-identified constraints on spaces for meaningful choice can be unlocked when architects heeded and harnessed underpinning principles of values-and-frames as key drivers and barriers of meaningful choices about sustainability (SS1/§5.2-SS2/§5.3). Evidence showed how architects created and maximised opportunities to facilitate favourable decisions through values-framing (ES3-SS1). Their main mechanism was values-framing/reframing for values-compatible and therefore more individually meaningful choices which endured challenge (ES3/§4.4-SS2/§5.3).

Third, the composite Values-and-frames concept informs an approach to decision-making in both research and practice. The approach can explain decision-problematising (ES2b, SS2), decision-communication (ES3-SS1-SS2), and the process of framing in decision-making about sustainability (MA2-4, ES3-SS2) from architects' perspectives as 'problem-framers' and 'decision-facilitators'. Values-and-frames also provides a composite approach to architectural sustainability communication, decision-making, and their management over time which can be applied in practice.

Taken together, the concepts, approaches, and findings on values-and-frames contribute to knowledge of decision-making about architectural sustainability. This develops existing research in project sustainability decision-making with a new, composite values-and-frames approach to interpersonal information-processing of individuals as problem-framers and decision-facilitators—or 'choice-architects' and 'choice-space managers'. Values-and-frames findings also contribute to understanding both opportunities and spaces for meaningful choice because meaningfulness interlinks values-and-frames with choices as decisions—the importance and specific contributions to understanding both opportunities and spaces for meaningful choice are discussed further in §7.2.5. This is significant to researchers and decision-makers because it showed how values-and-frames interact, their effects, the most impactful points for meaningful choice emergence and intervention (i.e., 'spaces'), alongside some useful frame options to create and maximise opportunities to create meaningful-choice-spaces. These contributions are supported by separate components of values (§7.2.3), frames and framing, (§7.2.4) and process management (§7.2.5) in deciding about sustainability, whose contributions are described below.

7.2.2 Novel mapping method

A novel mapping method was developed which can follow the values, frames, and values-and-frames in discussions/conversations over time. This is a contribution to knowledge of values-and-frames for three reasons. First, because it provides a novel method to track and understand both values-and-frames of problem-framer and decision-maker at key decision-making junctures (MA2/ES2), and the natural pathways of values' influences via frames as serially repeating sequences (MA3-4/ES3-SS1). Importantly, it also provides: a clear audit trail from initial design problem to any final decisions (MA2-4/ES2-SS2); a single-sheet depiction of values instantiations and shifts (*ibid*.); and an analysis 'matrix' with detailed analyses of key patterns by variable, relational analyses by project-decision-phase, and a case-

wide relational pattern analysis (MA4/SS2). No methods currently provide the means to do so.

Second, because the method co-evolved with a new 'equation' to describe values and frames interactions and effects on meaningful choices in decision-making processes (§4.4.2, §5.3.1). Third, because it can potentially be a useful method for studying sustainability not only in architecture, but also other fields where discussions like these are core to the process, e.g., in other stakeholder or collaborative decision-making processes.

7.2.3 Values in deciding about sustainability

Some exploratory insights were obtained about the nature of values, their roles, interactions, and influences in the context of framing and deciding about sustainability. Whilst these ideas are preliminary, they set the scene for others to build on, but contribute new insights towards filling knowledge gaps in values-and-frames, values in sustainability decision-making, and its processes from architects' perspectives on interpersonal-communicative interactions affecting individually-meaningful values-based frames and choices. Taken together, these contribute towards knowledge of values in deciding about sustainability from a values-and-frames perspective on structuring spaces for meaningful sustainability choice, outlined in Table 118. Their plausible individual connections to and extensions of existing research were critically appraised in §6.

Table 118 Insights on Values-in-deciding-about-sustainability

Mode	Insight: ***Values in deciding about sustainability can be:***
Representation	**Representations of individual meaningfulness**. Values can represent individual meaningfulness, worth, importance, and significance.
	Communicated by frames. Values can lack contextualisation and manifestation without a means to communicate them, i.e., via frames.
	Contextually expressed and represented by frames. Values can be expressed in context by ones' frames communication. Values expressed by frames typically represented an instance of a higher-order value in a specific context.
	Manifested through evaluations. Values can be manifested in project contexts through evaluations, typically found as micro-, meso-, or macro-evaluations.

(Continued below)

Table 118 (cont.) Insights on Values-in-deciding-about-sustainability

Mode	Insight: ***Values in deciding about sustainability can be:***
Occurrence	**Hierarchically prioritised**. Values manifestations can be interpreted by listeners as forming prioritised hierarchies, with highest-priority, dominant values influencing decisions the most.
	Activated and deactivated by frames' effects. The listeners' interpretation of a problem frame can activate a dormant value and deactivate an active value based on the relative compatibility of the frame to the value. This means that highly compatible frames in content and meaning can strongly activate and reinforce a related value, and vice versa.
	Contextually responsive to frames. Values manifestation and priority can be responsive in context to other people's frames based on frame-value compatibility via meaningfulness as above
	Reprioritised by frames' effects. Values in hierarchies can shift priority in response to other people's frames based on frame-value compatibility as above.
Typology	**Categorised in contextually-unique themes** because values were typically contextual expressions of broader or more abstract values at a higher level of analysis. This suggested a contextual instantiation of higher-order values, such as those characterised by established values classifications. Such a characteristic also resembles established concepts of *values instantiations* and *values traits and values states* (see §6.3.5).
Interpretation	**Interpretable accurately**. A problem-framer's accurate values interpretations can contribute to frames-to-values compatibility. Experience-based knowledge of this accuracy can provide heuristics to help professionals to improve their framing towards increased frames-to-values compatibility and client satisfaction.
Effects	**Influencing framing and frames**. Values can influence the *framing process* in terms of the intention, organisation, and desired effect of the process; and the *frame* in terms selecting of 'what to present' and 'how to present it' which communicates a problem definition, (causal) interpretation, evaluation, and recommendation. The influence of values on framing and values on frames can be determined by relational analysis of the sign, strength, direction/focus, and meaning. The most significant factor of this relative influence was typically reflected in frames-to-values' compatibility via meaningfulness.
	Sequentially influential. Values can influence frames in sequences repeating serially over time, following the above influence pattern.
	Forming influence pathways. Values influences can form pathways via frames from speaker to listener which create and constrain available 'choice-space'.
	Influencing decisions. Values can influence deciding about sustainability via meaningfulness depending on their priority and dominance in values hierarchies.

This is a contribution to knowledge because current research on values and sustainability decision-making typically focuses on either personal or organisational values; this research showed (ES3-SS2) that what mattered to sustainability decisions was individual values manifesting in project contexts (which may or may not reflect either personal or organisational values) and the relationship of framed decision-problems and choice-options. Findings empirically demonstrated the importance of values to sustainability decision-making particularly when considered with frames (ES2-SS2), which remains underexamined.

7.2.4 Frames and framing sustainability

Similarly, some exploratory findings were obtained about framing, frames' formulation, and effects in deciding about sustainability. They contribute new insights towards filling knowledge gaps in structuring meaningful sustainability choices from a values perspective. Summative insights crescendoed to show how by connecting frames compatibly with contextually-dominant human values, sustainability decisions can be improved through individual meaningfulness to endure challenge and change (ES3-SS2). These insights are summarised in Table 119 and appraised in §6. Taken together, these contribute to knowledge of framing and frames in deciding about sustainability with a composite values-and-frames approach to structuring meaningful sustainability choices. This is a contribution to knowledge because frames' involvement with values in facilitating or constraining the potential space for sustainability in decision-making processes remains under-researched, as is the use of values-based frames to unlock potential improvement opportunities.

Table 119 Insights on Frames and framing sustainability

Aspect	Insight: ***When framing sustainability in the context of decision-making:***
Formation	Frame-formulation can be influenced by the values of both problem-framer and decision-maker in sequence.
	Frames can be formulated to reflect and respond to values.
	Frames can be reframed to reflect contextually dominant values.
Typology	Decision-problem frames differ from choice-option frames and decision frames.
Action	Frames can manifest values. Values' representations of individual meaningfulness can be manifested and contextualised by frames.
	Frames can communicate a) tangible needs and issues as decision-problems, and b) intangible, values-based rationales for choice.
	Frames can communicate implied and explicit evaluations which manifest values.
	Because frames can communicate individual meaning and meaningfulness, frames can connect compatibly with values through meaningfulness.
Interactions/ Effects	Frames can influence others' values through communicating sustainability's individual meaning, worth, and import with varying compatibility to those values, i.e., values-framing.
Effects	Frame options' effectiveness can vary with category-level values-types, e.g., natural-world-type, responsibility-type, benefit-type, or gain/profit-type values.
	Frames connecting with dominant values can influence decisions which may be more enduring.

7.2.5 Managing sustainability decision-making processes

Preliminary evidence was obtained about architect's framing approaches or strategies which showed how they manage sustainability decision-making processes from the perspective of values-and-frames. Such findings contribute new insights towards filling knowledge gaps in project sustainability decision-making processes with a new perspective of architects' approaches to values-and-frames in action. More specifically, by looking at a higher level-of-analysis, patterns were found in architects' strategic approaches to values-responsive sustainability framing (ES1/§4.2.2, SS2/§5.3.4), sometimes used intentionally, which can enhance sustainability decision-making processes (SS2). More successful approaches had uniquely-identifiable techniques to values-framing, including 'lines-of-argument' and direct appeals to values, which some architects applied interactively in context at various times (SS2, Tables 113-115). Such values-framing approaches suggest a useful management concept which may facilitate what could be called '*values-based choice structuring'* towards more individually-meaningful choices affecting sustainability (§6.5.4). Findings on successful and alternative Values-Framing approaches contribute new insights outlined in Table 120.

Table 120 Insights on managing sustainability decision-making processes through Values-Framing approaches

Mode	**Insight** ***When deciding about sustainability, architects' approaches to Values-Framing can:***
Action	Comprise values-elicitation, values-listening, values-framing, active values-reflection-in-action, and values-reframing to identify, establish, and improve sustainability's individual, values-based meaningfulness.
Mechanism	Connect values to decisions through values-framing to improve design decision-making processes with more individually-meaningful choices.
Application	Heed the six factors of values interpretation accuracy and frames-to-values compatibility when *Values-Framing* in context to improve spaces and opportunities for meaningful choice.
Application	Apply one of the seven values-framing approaches to create, enhance, and maximise opportunity for meaningful choices that improve project sustainability outcomes.
Theorising	Link together the contributions of values-and-frames interactions; spaces and opportunities for meaningful choices; and values-framing meaningful choice options; thus crescendoing to values-based sustainability choice structuring via values-framing.

Taken together, findings on values-framing approaches contribute new insights towards knowledge of managing sustainability decision-making processes with a novel perspective on a composite approach to values-and-frames in action. Given these findings and their integration in §6.6, this is a contribution because no research currently considers values-based approaches to framing sustainability in project decision-making processes as wider-scoped improvement strategies.

7.2.6 Overall Contribution to Knowledge

Altogether, the primary insights of this research combine to contribute new insights toward knowledge of values-and-frames in communicating and deciding about architectural sustainability. By combining cognate and mutually supportive research pathways of human values with frames and framing in decision communication, evidence about influences on decision-making about sustainability was found and followed through values-and-frames reciprocal interactions over time. Through grounded thematic analysis, the concept of meaningful choice emerged as a key mechanism in a composite values-and-frames approach. Together they have been initially evidenced in architects' more successful attempts at structuring clients' choice-spaces and facilitating more individually meaningful, values-based choices. This is a contribution because research currently tends to overlook the role of frames in communicating values and unlocking values-based motivation by harnessing values-and-frames as a composite concept. As such, a composite values-and-frames approach to more meaningful choices is useful because it helped reveal new, potentially significant links between values, frames, and decisions, with individual, values-based meaningfulness providing new motivations to consciously choose and retain sustainability when challenged. The overall contribution includes the primary insights summarised in Table 121 and appraised in §7.3.

Table 121 Overall contribution

Domain	Primary insights
Research approach	1) Demonstration of a composite values-and-frames approach as a useful lens to bridge two cognate research pathways towards improvements in decision-making about sustainability.
Mapping method	2) Demonstration of a systematic mapping method, useful to follow values and frames interactions and influences in discussions about sustainability in project decision-making processes.
Values in deciding about sustainability	3) Evidence that values and frames can separately and together interact and influence decisions about sustainability based on frames' compatibility with values expressed in prioritised hierarchies through frames.
Motivating choices	4) Evidence that the concept of values-based meaningfulness can link human values to decisions via frames to unlock more individually relevant motivations to consciously choose sustainability.
Frame effects	5) Evidence that frames' effects on decisions via values can both a) constrain spaces for meaningful choice and b) create and enhance opportunities to create more space for client's meaningful choice by heeding and harnessing values-and-frames interactions, influences, and effects over time.
Structuring and managing choice-space	6) Evidence that existing approaches to framing sustainability to elicit decisions can be better described by composite a values-and-frames approach to structuring and managing more individually-meaningful choices in project sustainability decision-making processes.

7.3 Critical appraisal and reflection

7.3.1 Critical appraisal

This section provides a reflective critique and critical appraisal of the research and contribution with criteria used to evaluate them in related research and fields in Table 122. Based on the appraisal, the contribution to knowledge satisfies at least one objective of scientific knowledge-creation. To complete the evaluation, the research is assessed for characteristics of a unique contribution, Table 123. With these assessments of knowledge objectives and uniqueness, the research can then be interpreted and evaluated with these in mind.

Table 122 Appraisal of research against objectives of scientific knowledge-creation*

Objectives*	Appraisal
A method of organising and categorising 'things', (a typology)	A composite values-and-frames approach (CH4-5) can preliminarily organise and roughly categorise some important and useful aspects of deciding about sustainability, including: values influence pathways via frames (ES3) values themes and values-types (ES3-SS1), frames types/options (SS1), values-framing approaches (SS2c), and factors of successful values-framing and meaningful choice (ES3, SS2).

**Objectives based on Reynolds (1971) in Handfield and Melnyk (1998)*

(Continued below)

Table 122 (cont.) Appraisal of research against objectives of scientific knowledge-creation*

Objectives*	Appraisal
A sense of understanding about what causes events	The availability, quality, and characteristics of space for individually meaningful choice about sustainability may be caused by values and frames interrelationships and actions in the ways explained by a composite values-and-frames approach. The variation in architects' values-based approaches to facilitating and structuring spaces and opportunities for clients to make more individually meaningful choices through values-framing/reframing may be a potential cause—and explanation—for the difference between initial intentions and final decisions.
Explanations of past events	Values influence pathways via frames may explain not only values-and-frames interactions and effects; but also formation, shifts, and changes in decisions about sustainability over time. Accurate values interpretations and frames-to-values compatibility may explain variations in decisions favouring sustainability or not.
Predictions of future events	Decision-maker's responses to sustainability option- and problem-frames may be predicted through their values manifesting in context, e.g., when a speaker accurately interprets their values then frames sustainability to be more values-compatible.
The potential for control of events (in some cases)	The research has initially identified some mechanisms and techniques of a composite values-and-frames approach to 'choice structuring'. These may help architects and their clients to visualise the values landscape, understand something about sustainability's individual meaningfulness to decision-makers, then formulate and frame better sustainability choice-options that more closely reflect those values. Such an approach may be useful to facilitate better client decisions by harnessing values-and-frames to create and maximise opportunities and thereby spaces for their more individually-meaningful choices about sustainability in their own contexts.

**Objectives based on Reynolds (1971) in Handfield and Melnyk (1998)*

Table 123 Appraisal of characteristics* for original research and knowledge contribution

Character*	Appraisal
Original	The findings show an original convergent approach to the area of values-and-frames is productive of useful insights, because non-technical approaches to project sustainability improvements, including social, psychological, behavioural, and decision scientific approaches, remain under-researched.
	The work is original in its application of a grounded, convergent methodology with mapping method.
	The insights towards knowledge contribution are original in the composite values-and-frames concept and perspective bridging the architects' individual-cognitive and interpersonal-communicative interactions with the architects' interpretations of client and stakeholder responses in architectural project sustainability. §7.2 outlines each original insight leading to this overall contribution.
Innovative	The research and its contribution are innovative in: the composite values-and-frames approach; the influence mapping method; and the potential application of values-framing as an approach to values-based choice structuring in practice, which includes examples of frame options and values types.

(Continued below)

Table 123 (cont.) Appraisal of characteristics* for original research and knowledge contribution

Character*	Appraisal
Positive risk-taking	Although exploration is risky, the grounded research approach with novel mapping method successfully permitted new insights to emerge from the data in an inductive manner which facilitated a reasoned and justified exploration of key emergent factors to then systematically research.
	It was risky but productive to extend the study from influences *on* architects' framing/frames, to architects' interpretations of their clients' values and reactions, and frames' influences on clients because it produced unique insights on the effects of architects' interpretations and actions, which were in fact more important to sustainability outcomes than anticipated.
Relevant	The research and contribution are relevant *because* sustainability, client interaction, and decision-making in design and construction are inherent in architect's role as building designers and managers of architectural projects. Architects' and projects' success may be contingent upon values-compatible framing and deciding about sustainability, likely improving project sustainability.
	More broadly, decisions about sustainability are relevant to projects and communities *because* their consequences can impact upon the real world in both tangible and intangible ways (e.g., resources and joy, respectively) which can enhance or detract from success and prosperity in the longer-term.
Meaningful	The research and contribution are meaningful in three ways: 1) It is collectively meaningful because it contributes towards addressing the challenging but socially beneficial and worthwhile goal of values-based sustainability. 2) It is interpersonally meaningful because it bridges the individual-cognitive domain of individual values (as guiding ideals in behaviour and decision-making) and the interpersonal-communicative domain of architect's formulating and framing choice options for clients' and stakeholders' individually meaningful choices. 3) It is individually meaningful because it emerged that *'individual meaningfulness'* is a key concept in sustainability decision-making, whereby the composite values-and-frames approach can be harnessed by professionals to facilitate better and more opportunities to create spaces for better choices about sustainability that are more individually-meaningful to clients and stakeholders, including end-users and potentially architects themselves.

**Characteristics adapted from Baptista et al. (2015)*

7.3.2 Critical reflection

A case-based grounded, 'bottom-up' or inductive approach was adopted; thus, emergent patterns were recorded when found and followed when assessed as worthwhile. This meant that rich, detailed, yet complex pictures were developed from the data of multiple participants' numerous real-world experiences. Demonstrating the core patterns in detail with one exemplar study thus communicated the main patterns found in the first six cases and captured through case-maps. This led to focusing only on the most significant portions of architect-client interactions' units-of-analysis as $[F_{AR}]\rightarrow(V_{CL})\rightarrow[F_{CL}]$, which could be interpreted as a drawback or strength depending on one's view of studying novel

complexities. From these, several research outputs were written and/or presented as summarised in §3.2.5.1.

Thus, although the research problem was complex, the investigation successfully transitioned from preliminary to structured exploratory studies in systematic manner whilst avoiding overly reductionist actions which contradict the grounded approach. This required the research to satisfactorily account for structure, context, complexity, persona, and individual meaning subjectively and intersubjectively. Using a case-based grounded approach to the nature and relationships of both values and frames in context was ideal, where interviews generated rich responses from which useful cases were generated and interconnecting propositions were developed within higher-order system-level 'choice structuring' approaches which could explain the findings. Larger, broader patterns among multiple perspectives were then established once viable candidate explanations of the fundamental relationships and sequences were known from finite groups. Knowing these fundamentals, other research approaches might also be developed to examine wider applicability, such as whole-systems, indicators, social heuristics, normative, or quantitative approaches.

7.4 Limitations and their mitigation

This research was predominantly exploratory in nature, noting that all research is inherently limited by any methodology adopted (Mills, 2013). Following from the criteria for judging research quality and rigour (§3.8), several techniques were used to enhance i) rigour through accuracy by managing and/or neutralising validity threats, and ii) research quality through reliability and replicability. A post-research assessment determined that the techniques identified in §3.8 for addressing the limitations have been effective, with additional and emergent considerations summarised below.

It was clear that case study methods (CSM) required recording rigorous, linked analytical processes to form the bedrock of defensible and justifiable findings which came from the data, not forced, fabricated, or imagined (Yin, 2014). However, other authors have noted limitations of case study methods in providing the means to adequately analyse data to such standards, or to simply represent complexity (e.g., Hodkinson and Hodkinson, 2001) as expected in this research. This prompted the need to supplement CSM with supporting, grounded methods after extensive literature review and reflection in constant comparison between the epistemological scaffold, research questions, aims and objectives, interview questions, data generated, and methods on which they were based, as summarised in §3.

Initial case organisation became a limitation during the preliminary exploratory phase when the level-of-analysis posed conceptual challenges to account for influences from individuals' perspectives on interindividual-level interactions. This was subsequently adapted to overcome the limits of studying broad processes by organisation or participant by focusing what the data was 'saying' in true inductive grounded form. In response to those studies' findings, cases were reorganised by client-project, which also served to overcome limitations on applicability based on too-broad case boundaries, explained in §3.2.5.

One limitation arose later in the study of architect-client interactions from the perspective of architects. Recognising this could have been a potentially limiting factor, it was originally intended to involve clients. However, through communicating and reflecting on the exploratory findings, it was found that what was most relevant to architects' framing was the client values that architects interpreted, alongside their own values. Architects were framing sustainability to their clients based on their interpretations of client values in context, and over time. Furthermore, current research has confirmed that second party or 'other-reports' of an individual's values will typically report meaningful similarities such that other-reported values were significantly accurate and increased with

interindividual familiarity (Skimina *et al*., 2018; Skimina and Cieciuch, 2017; Bardi and Schwartz, 2003). Architectural professional's judgement and knowledge of their clients and their values conforms to this description; importantly, retrospective interviews capturing this data from experts are also considered valid forms of generating evidence (McDonald and Gandz, 1991; Sosniak, 2006). In a further development, it also became possible to cross-check' architects' interpretations of clients' values with clients' frames following the above logic, as explained in §3. Thus, involving clients became inessential here, and the subsequent stages of research focused on architects and their experiences.

7.5 Recommendations

7.5.1 Implications and impact

This research has shown that the convergence of values-and-frames is a rich but challenging area with depth and potential opportunities for impact. Given the exploratory nature and preliminary findings, there is a need for further research within and across the five principal themes, alongside a prospective sixth. Key suggestions are summarised in Table 124.

Table 124 Potential research implications

Principal Theme	Research needs
Values-and-frames interactions	Given the potential significance of a composite values-and-frames approach to understanding and improving sustainability decision-making, there is a need to: *Understand the applicability and transferability of the approach by extrapolating it to other cases and situations within and beyond architectural design and construction.*
Influence process mapping method	Given the preliminary development and application of the mapping method, there is a need to: *1) Deploy the method with discussions from i) multiple perspectives, or ii) live projects.* *2) Map similar discussions in more cases and situations, such as other similarly-led architects from different regions and countries, and/or architects involved solely with sustainability and/or with certain sectors such as housing, healthcare, education, etc.*

(Continued below)

Table 124 (cont.) Potential research implications

Principal Theme	Research needs
Spaces and opportunities for meaningful choice	Given that opportunities to create more and better-quality spaces for meaningful choice begin to explain existing boundaries and potential chances for improving sustainability decision-making, there is a need to: *Understand an even broader range, quality, characteristics, timing, and precise boundaries of available, possible, or most effective spaces for meaningful choice.*
Values-framing more meaningful choice options	Given that values-framing may improve sustainability decisions through employing values-and-frames effects towards meaningful choices when framing and deciding about sustainability, there is a need to: *Understand the conduct, composition, and effects of values-frames and values-framing in an even broader range of discussions with a range of stakeholders and human values at various times in project decision-making processes.*
Structuring, empowering, and mobilising more meaningful choices	Given that values-based choice structuring can organise, empower, mobilise, and manage spaces and opportunities for meaningful choices by employing the values-framing mechanism, there is a need to: *Understand an even broader range of typical, ideal, and problematic conditions for values-based choice structuring alongside the associated effects of values-framing therein for ranges of discussions, architectural, and framing approaches.*
Upscaling values-and-frames convergence	Given the potentially fundamental nature of the key underpinning principles, there is scope to apply the research approach in other cognate fields including sister AEC disciplines, Education for Sustainable Development, sustainable waste management and recycling, sustainable community development, and community climate change adaptation, or other fields involving interaction with stakeholders in socially-beneficial decision-making like sustainability.

More broadly, this approach has informed research applications in allied areas through other projects within the university research group and beyond, with four publications shown in Table 125. Altogether, these show how useful a composite values-and-frames approach could be to broader sustainability efforts.

Table 125 Application and impact of the research concepts in other research

Author	Application	Outcomes
Rosado-May (2016)	Considered and applied values and frames as useful concepts to evaluate and structure regional Education for Sustainable Development in Mexico.	Evaluated that a values-based approach to structuring and communicating a more sustainable and equitable education system towards sustainable development and economic growth is a bold and innovative strategy to overcome financial and political difficulties in the region.
Huang *et al*. (2018)	Considered and applied frames and framing effects to evaluate urban recycling behaviours in China.	Demonstrated that a positive framing with clear, focused guidelines, describing and depicting requirements and rationales for recycling, delivered through human-human interaction show improved recycling rates. This implies that such frames could activate values associated with pro-social sustainable behaviours.

(Continued below)

Table 125 (cont.) Application and impact of the research concepts in other research

Author	Application	Outcomes
Moreno *et al*. (2019)	Applied the fundamental concepts of values-based reflection-in-action and active values-listening in UK community development.	Demonstrated the core role of values in development of sustainable communities by eliciting a community's values which then aided reflection on (and subsequent framing of) development goals in values terms.
Sethamo *et al*. (2020)	Applied the fundamental concepts of sequencing in values-framing for community climate change adaptation in Botswana.	Demonstrated how to successfully elicit a community's values first, before climate change adaptation decision-problem frames were formulated in values terms, with outcomes predictably following the principles of values-and-frames.

7.5.2 Practical applications

The new insights can be translated into practical applications for improving practice. Prospects for practice involve applying these principles toward improving sustainability decisions through values-framing for individual meaningfulness. This could be achieved through novel applications of six theoretical insights, shown in Table 126. Some model appeals are provided in Table 127 as exemplar statements for use in practice.

The theoretical insights and contributions include general underpinning principles of fundamental variables which applied to the groups studied, but can be extrapolated to other groups and situations. Such application can be facilitated through initial familiarisation of values and frames using the tables provided in Chapters 4-5 and contextually applying the proposals in Table 127. This means that, prospectively, the variables' relationships, effects, and potential applications may exist beyond architectural sustainability. Other related groups to which the findings might be extrapolated include sister AEC professions, organisational and governmental policy applications, and community sustainability interventions where discussions like the ones studied play roles in communicating and deciding about sustainability.

Table 126 Prospective applications of five theoretical insights

Theoretical insights	Application to improve practice
Composite Values-and-Frames approach to facilitating opportunities and structuring spaces for meaningful choice	Because sustainability's individual meaningfulness is highly likely to be a key link between problem-frames, values, and decisions, the interactions between values and frames can be harnessed towards sustainability improvements via the concept of meaningful choice. This approach can help architects to structure their clients' choice-space through values-based improvements in selecting 'what to present' (formulating values-based choice options) and 'how to present it' (describing the choice options in values terms). In so doing, architects can better facilitate the space required for more individually meaningful and therefore enduring choices by clients and stakeholders, thus maximising their opportunities for sustainability.
Values-engagement	To know 'what to present' first requires engaging with clients and stakeholders to 'listen for' or elicit values in the project context, and accurately interpret those values, noting the key factors from Chapter 5. See Table 127 for model appeals.
Values-framing	To know 'how to present' sustainability options requires translating sustainability into values terms by framing and reframing contextually-relevant options to be more individually meaningful and therefore valued. Frames-to-values compatibility can be achieved by relating sustainability's tangible and/or intangible aspects to decision-makers' values using framing for communication techniques like language, metaphors, tone, timing, intonation, sequencing, etc. See Table 127.
Values-reflection and Values-reframing	To know whether ones' frames are useful and effective requires heeding listeners' responses and reflecting-in-action on those responses from a values perspective. This varies from traditional/typical architect-client interactions, where their interactions are not always acknowledged as values-based, nor are their interpretations of values-based responses consciously acknowledged. This variation can mean the difference between frames-to-values compatibility for favourable decisions, versus incompatibility for unfavourable. Reflection-in-action provides the opportunity to consider clients' and stakeholders' reactions and responses—cues and clues—from a values perspective and adjust/recalibrate problem frames and decision options to be more compatible with any values presently prioritised. See Table 127.
Managing change through vigilance for values shifts	To manage decision landscapes for meaningful-choice structuring requires values-based reflection, iteration, and vigilance for any shifts or changes in values' presence and priorities, however subtle, (e.g., their instantiation, activation or deactivation) in response to *any* frames. Architect's values-framing approaches showed promise in structuring choice-spaces towards improving values-based sustainability decisions. See Table 127.

7.5.3 Practical recommendations

Recommendations for practice are focused into seven sequential and interlinked proposals for action to apply the findings to improve future decisions about sustainability and thereby sustainability outcomes. This can be possible through individually-meaningful, values-based choices and the decision-problem frames professionals formulate for communicating decision-problems and choice-options

to decision-making stakeholders as this research has shown. Proposals for action in Table 127 are premised on and therefore require knowing in advance a range of potential sustainability options and applications. Whilst adopting these actions piecemeal would facilitate some sustainability improvements, employing them all would bring the most improvements based on the findings from this research.

Table 127 Improving sustainability outcomes: Proposals for action, in sequence over time

Step	Action	Model appeals and lines-of-argument
Action 1	**Establish the values basis of meaning:** *Eliciting* and *recognising* decision-maker's values: what is most important, worthwhile, meaningful, significant.	"What are your aspirations… what would you like to achieve? To leave behind? What would make the process, building, and its' spaces *most* meaningful and worthwhile to you? What reasons would you like to give to people when explaining your decisions?"
Action 2	**Determine sustainability's meaningfulness *for the decision-maker:*** *Formulate* sustainability options in terms that compatibly connect with, respond to, resonate with, or reflect those values.	*'With what I've heard about their values, how can I phrase, characterise, or otherwise frame sustainability measures and options for this project in the most meaningful ways that reflect and respond to those values?'*
Action 3	**Frame sustainability more individually meaningfully.** *Communicate using more values-based language* to make sustainability more individually meaningful and therefore more enduring.	For useful frame options, see SS1 Tables 88-89 and 91-92, and SS2c Tables 109-110 and 113-114.
Action 4	**Ensure accurate interpretations:** *Reflect-in-action* on reactions, responses, outcomes, then *recognise* shifts or changes in the values *and* decision-making landscapes that constrain choice-space.	"So what *really* is *most* valued? What would be *most satisfying long-term*? What is *your* bottom line, your red-line, your back-stop?"
Action 5	**Ensure sustainability *remains* meaningful for the *decision-maker:*** *Reframe* sustainability options as Action 2.	"If you knew in, say, 9-months that you'd be challenged by objections, costs, risks, conflicts, and compounded complexity, what would you choose to retain, why, and how does that relate to your legacy? When critically challenged, how would you choose differently and why?"
Action 6	**Prevent later reductions and/or costly changes:** *Reflect* on reactions/responses/outcomes, then *remaining vigilant* to and address shifts or changes in values *and* decision landscapes.	*'What's changed? Is it the priority of previous values? Has the character of earlier values shifted? Or have new values and their priorities emerged because of what's been said about what's happening? What can I say **in values terms** that will help clients avoid changing their minds and keep sustainability on track?'*
Action 7	**Address shifts and changes**: *Remain vigilant* for values-based cues and clues through values-framing/reframing, iteration, and reflection.	*'What's next? What's happening here? What do I need to do now to prevent sustainability reductions?'*

7.6 Conclusion

The prevailing motive for this research was to understand which fundamental human influences are driving the universal challenge of human-environment unsustainability; accessible in project contexts; and key to unlocking more enduring improvements. By studying values-and-frames together, these two pathways—previously-disconnected empirically—were converged to demonstrate existing and potential opportunities for sustainability improvements.

This research has shown that is it both possible and useful to study sustainability in architectural project decision-making processes with a composite values-and-frames lens. Such an approach was helpful to understand the ways in which architects identify and unlock more enduring motivations to consciously choose sustainability for more individually meaningful reasons. Adopting a systematic methodology and developing a novel mapping method were effective because they were used to trace the natural pathways of values' influences throughout projects via frames, from preliminary architect-client interactions to later framed messages and 'final' sustainability decisions. Values-framing was identified as one potentially effective route some architects naturally use to facilitate more individually meaningful, values-based sustainability decisions.

This bridging of the individual and interindividual analysis levels could be significant to practice because it shows how sustainability choice options were framed which connected more compatibly with values to make and maximise opportunities to provide space for clients to make more meaningful and therefore typically more enduring decisions. Such bridging could be significant to theory, because patterns suggesting fundamental underpinning principles were identified within and across all twenty-six architect-client project-based cases and 128 units-of-analysis from numerous different participants recalling discussions with various specific clients. Hence, the impact of a composite values-and-frames

approach to both researching and conducting sustainability 'choice structuring' and decision-making in projects is likely to extend beyond architect-client interactions. Because values are known fundamental drivers of human decision-making behaviour, these principles could be applicable to other conditions where decisions about sustainability involve its framing to people. When architects knew more about stakeholders and clients' values and values' priorities, this enhanced their potential to facilitate favourable decisions. Then, when sustainability was framed in more individually-meaningful, values-based terms to them, such frames could connect compatibly with values in prioritised hierarchies, thereby facilitating the opportunity and creating space for clients' more meaningful choices about sustainability. Some typical values-types were identified with which Frame Options worked with varying success.

The work therefore begins to contribute new insights toward general underpinning principles of values-and-frames interactions and effects that may be applicable more widely. The basic principles of values-and-frames initially detected and mapped in six initial cases, then presented in one exemplar case to demonstrate specific applications of the more general, underpinning principles. Numerous Frame Options working with (and against) values-types also demonstrated the usefulness of the general principles in describing effects first found therein. These principles were again identified and mapped in twenty new cases thus confirming their potential usefulness in describing a wider range of different discussions, conditions, and contexts. Further aspects of values-apprehension and values-framing contributed additional insights about such principles. The underpinning values-and-frames principles are thus useful to understand how to improve sustainability in architectural practice and theory because they begin to describe fundamental but subtle and therefore overlooked interactions. Such interactions can individually and summatively contribute to creating and constraining opportunities and spaces for more meaningful client

choices and consequently overall project sustainability. These core concepts are thus considered to be theoretically saturated for these participants.

Thus, converging these previously under-researched pathways contributes new insights about architects' values-based sustainability 'choice structuring' through values-framing and their effects. Now both scholars and practitioners can begin to better understand and harness values-and-frames interactions over time. This may lead to an increase in not only opportunities for more meaningful choices but also more effective formulation, framing, and choosing of sustainability in more individually, values-based, and therefore enduring ways. Heeding and harnessing values-and-frames influences together could improve opportunities with values-based frame options. Their combined impact, e.g., at a management-approach level, could empower professionals and stakeholders alike to improve decisions affecting project sustainability by consistently connecting decisions to values with more individually-meaningful decision options and choices via better problem-frames, with a likely increase in sustainability improvements *plus* client and stakeholder satisfaction. When consistently applied, this may likely have an overall improvement on local and potentially regional sustainability in the medium- to long-term with lower project impacts than the alternatives where frames-values connections continue to be overlooked and choice option frames continue to be formulated without recourse to deeper, individual meanings and impacts than are traditionally considered.

In conclusion, the empirical findings and theoretical insights resemble a '*values-based choice architecture*' in the tradition of behavioural decision theory. For decision and choice scholars, this work presents preliminary evidence of, and justification for some rudimentary principles of the interactions and effects of values-and-frames on sustainability problem-frames, choice-options, and decision-making over time. For sustainability communicators and scholars, this work begins to fulfil the promise of values-and-frames with new empirical evidence of

their potentially mutual reciprocity. For architects and professionals, this means that seemingly ordinary interactions affecting sustainability can be unlocked to harness and communicate important values information in subtle and easily-overlooked frames from and to clients and stakeholders. The clarity, stability, and consistency of clients' values in prioritised hierarchies can enhance their interpretability by architects, who can then frame sustainability to connect more compatibly with dominant values to create more meaningful choice-options. However, frames can also activate other less-supportive values and/or suppress more helpful values in times of critical challenge to effect decision shifts and changes. Knowing this, the main message for professionals is to maintain vigilance for and respond to such variations using these findings and recommendations as a guide. The main message for clients and stakeholders as decision-makers is that understanding and communicating ones' human values in context is critical to maximising opportunities for more meaningful choices and vital to project sustainability outcomes which separately and together are likely to contribute to their satisfaction.

Taken together, the research begins to show how a values-based choice structuring that heeds and harnesses values-and-frames interactions and effects through eliciting and framing to dominant-values can empower project professionals and stakeholders alike to create and maximise opportunities for more individually-meaningful and therefore potentially more enduring sustainability choices. Only when sustainability is more individually-meaningful and therefore more valued may humankind begin to see consistent shifts towards more widespread human-ecological sustainabilities.

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Appendices

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Contents

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Appendix 1 Glossary of abbreviations & terms

Glossary of Abbreviations

AEC	Architecture, Engineering, and Construction
BD&C	Building Design and Construction, as a focused-subset of AEC
BREEAM	Building Research Establishment Environmental Assessment Method
BRE	Building Research Establishment
BS EN	British Standard European Norm (British Standards aligned with standardisation principles recognised by the European standardisation policy)
BSI	British Standards Institute
CapEx	Capital Expenditure
CfSH	Code for Sustainable Homes, now withdrawn and incorporated into recent Building Regulations updates
CIAT	Chartered Institute of Architectural Technologists (UK)
CSM	Case Study Methods
DBEIS	Department for Business, Energy, and Industrial Strategy (Current at 2020)
DBIS	Department of Business, Innovation, and Skills (Defunct at 2020)
ES	Exploratory Study
G1-G3	Participant Group 1, mixed construction professionals; Group 2, Commercially-oriented architectural professionals; Group 3, Design- and Sustainability-orientated architectural professionals
GHG	Greenhouse Gases
GT	Grounded Theory
H.M. GOVERNMENT	Her Majesty's Government (UK)
INNOVATE-UK	The UK government's innovation agency; part of UK Research and Innovation (UKRI)
IPCC	Intergovernmental Panel on Climate Change
NIBS	National Institute of Building Sciences (US)
NPPF	National Planning Policy Framework
RIBA	Royal Institute of British Architects (UK)
SS	Systematic Study
UNEP	United Nations Environment Program
UNEP-SBCI	UNEP Sustainable Buildings and Climate Initiative
UNFCCC	United Nations Framework Convention on Climate Change
UNSDG	United Nations Sustainable Development Goals, as used in this research; (*not* United Nations Sustainable Development Group)

Glossary of Terms

Analytical or conceptual lens Methodological, conceptual, and analytical devices to establish a specific perspective and focus on and illuminate specific aspects, as explained and justified in the context of their use. Lenses have been used to conceptualise, structure, and examine specific 'components' or 'variables' of the research problem, which were developed as they and their significance emerged along the research pathway. Using such lenses help to make sense of complex problems (Swanson and Bianchini, 2015) whereby a useful lens can "lead analysts to different judgements about what is relevant and important" (Allison, 1971:253, in Cram, 2005), e.g. adopting novel angles on tricky problems for new insights, such as goal framing (Vansteenkiste *et al*., 2007) or participatory design (Clark, 2008). See also Chapter 1, Table 2

Attitudes "Amorphous", more fleeting and unstable reactions—"a state of readiness" influencing responses to related objects and situations (Mills, 2013:156-157). Problematically, attitudes are formed of affective feelings, cognitive beliefs or knowledge, and behavioural inclinations (Crano and Prislin, 2011; Mills, 2013), thus contributing to their amorphousness and difficulty to establish, which potentially precipitated Mills' (2013) association of *value* with *attitude*. This view is not adopted in this research.

Decision(s) Uniquely identifiable outcomes from a process involving a position, opinion, or judgment reached after consideration of the decision-problem and options presented (for choice) (Swami, 2013; Klotz *et al*., 2018). See also Chapter 2, Table 10.

Decision-making Selecting a course of action among available and potentially competing alternatives (Brest and Krieger, 2010). "Decision-making refers to the mental (or cognitive) process of selecting a logical choice from the available options. It implies assessing and choosing among several competing alternatives" (Swami, 2013:204). See also Chapter 2, Table 10.

Design decision-making "the process, operation, or procedure of decision-making plus intellect, creativity, and passion together in a process of translation, which includes defining, learning, representation, and deciding" (National_Research_Council, 2001:4).

Decision-making process "In the conventional approach to decision-making, the principal ingredients of a decision process are (a) a set of alternatives; (b) a set of constraints on the choice between different alternatives; and (c) a performance function which associates with each alternative the gain (or loss) resulting from the choice of that alternative" (Bellman and Zadeh, 1970:147).

"[D]ecision-making is an iterative process of different kinds of value judgements, resulting in different kinds of product values. These values are not easy to sum up and justify as one 'truth' because they are based on perceptions of the group members" (Volker, 2010:35).

"[D]ecision-making is a process of goal setting, perception, information processing, framing, comparison, evaluation, deciding on action and finding decision support which occurs at individual as well as on the level of the team (Beach and Connolly, 2005; Hodgkinson and Starbuck, 2008)" (Volker, 2010:120).

Design decision-making process "the [design] decision-making process usually follows a standard cycle: setting the problem, analysis, proposed solution,

and evaluation" (d'Anjou, 2011:46). "[I]n a typical example of this process, …[t]he steps that she proposes are: research of the questions, analysis of the situation, proposal generation, evaluation, and choice" (Whitbeck, 1998; in d'Anjou, 2011:46).

Design decision processes involve: 1) knowledge of the design decision process (acquired from training and practice), which contributes to optimal decision process design; 2) the broader perspective of designing and managing the business; and 3) how the design project can contribute to the business goals (Hansen & Andreasen, 2004).

Decision-problem The *difference* between a current unsatisfactory condition and a desired alternative or future condition or state (cf. Brest and Krieger, 2010; Newell and Simon, 1972). The decision 'problem' could be seen neutrally as a state or condition; negatively as source of difficulty or challenge; or positively as an opportunity. Addressing the decision problem—deciding—is the attempt to move between current and future desired states via various actions potentially not initially obvious to a decision-maker (*ibid*., 2010). This movement happens across or through the 'problem space' (Newell and Simon, 1972).

Design "[T]he intentional shaping of matter, energy, and process to meet a perceived need or desire. It is the hinge that inevitably connects culture and nature through exchanges of materials, flows of energy, and choices of land use. In many ways the environmental crisis is a design crisis. It is a consequence of how things are made, buildings are constructed and landscapes are used" (Van der Ryn and Cowan, 1996; in Kibert *et al*., 2003:233).

Design thinking A way of thinking iteratively, inductively, and/or abductively about and solving design problems. Skilled designers' design thinking is abductively devising an unknown 'thing' and an unknown 'working principle' which facilitate the known/desired 'value', e.g., state, endpoint, product, or building (Dorst, 2011).

Evaluation "Evaluation can be defined as inquiry that establishes the value and goodness of a practice based on insiders' and contextual knowledge" (Abma & Widdershoven, 2011:670)

Frames "Frames are both mental structures that order our ideas, and communicative tools that evoke these structures and shape our perceptions and interpretations over time" (Holmes et al., 2011:36). Frames communicate meaning, and reframing can embed new meaning in context (cf. Matthes and Kohring, 2008; Hertog and McLeod, 2001; Cornelissen and Werner, 2014). Frames are perceived differently by decision-makers under various conditions; because framed options influence people's interpretations of outcome likelihood and desirability, they impact sustainability decision outcomes—*framing effects* are the consequences (Shealy et al., 2016; Klotz et al., 2018).

Cognitive frames "designate interpretive structures that render events and occurrences subjectively meaningful, and thereby function to organize experience and guide action" (Snow, 2007:1778).

Communication frames Any communication that characterises and emphasises a certain perspective, view, or interpretation over another using language, timing, phraseology, emphasis, intonation, etc., including omission and oversight, involving aspects of the decision problem-framing context. "Frames are interpretable from human language which make them accessible both during active discussions and through data capture and analysis" (Löbner, 2014).

Frames of reference "in a decision-making or social judgment scenario, individuals construct cognitive frames that compare it [decisions/judgements] in detail to a relevant reference point, or baseline" (Cornelissen & Werner, 2014).

Mental or cognitive frames Any mental system of assumptions and standards that characterise or emphasise a perspective, view, or interpretation that sanctions behaviour and gives it meaning. Such mental or cognitive frames are herein considered both inaccessible and less helpful at the interpersonal level-of-analysis.

Problem-frames, Decision-problem-frames Frames which capture people's understanding as e.g., focus, level, and characterisation of a problem/issue for decision (Cornelissen & Werner, 2014).

Framing Framing in communication concerns the act of bounding or describing choice options (i.e., specifying viable decision alternatives (e.g., Maule & Villejoubert, 2007)) to communicate their meanings in different ways; frames can then be considered as the results, artefacts, or tools (ibid., 2014; Shealy *et al*., 2016; Klotz *et al*., 2018).

Framing interactively "Dynamic and socially situated processes of meaning construction (Cornelissen & Werner, 2014:183)".

Problem-framer Any individual typically making grounded and accurate references and/or inferences about a situation (Mullenbach, 2007) in the act of bounding or describing choice options (i.e., specifying viable decision alternatives (e.g., Maule & Villejoubert, 2007)) to communicate their meanings in a particular way.

Framing bias The effects of presenting or bounding (framing) otherwise equivalent information (Cornelissen & Werner, 2014), e.g. in terms of gains, losses, or change relative to now or later.

Decision reference point bias, or Prospect Theory (Kahneman & Tversky, 1984), importantly relates to problems of underestimating (distant) future possibilities (Klotz *et al*., 2018), thereby discounting likely outcomes (Voinov and Farley, 2007), particularly when possibilities concern future human and non-human others (*ibid*., 2007; 2018).

Framing effects *Framing* quantitatively equivalent choice options or decision-problems influences decisions counterintuitively to bias towards more immediate gains (Kahneman & Tversky, 2000); one principal framing effect is *Framing bias.*

Meaningful choice A conscious consideration of what sustainability means to a decision-maker and equally how such a choice/decision will affect project impacts on issues associated with sustainability and made with respect to both their individual situations and broader, long-term goals. "[A] choice becomes meaningful when the reason for the choice is to fit important goals (Csikszentmihalyi, 2000)". Meaningful choices embed the individual meaningfulness of a decision-problem *to decision-makers* in their choices/decisions.

Choice-space A distinctive socio-cognitive 'space' for both 'problem-setters' (e.g., managers/architects/engineers) and decision-makers to collectively "visualise and explore" (Potschin, 2008:426) 'decision-problems' and solutions for desirable, possible, likely, and acceptable outcomes. A *choice-space* is conceptualised as an extension of the focused-level decision-problem extents; "Once the state [i.e.,

problem-] space is fixed, the choice set may be defined. …the choice space consists of the original basic acts and the set of *conceivable acts* (that is, all the mappings from the set of states to the set of feasible consequences)"(Karni, 2017:83). Importantly, the *choice-space* concept allows problem-framers the opportunity of "expanding the state space in the wake of growing awareness" (*ibid*.) such as awareness of new problems or frames.

Sustainability choice-space A *choice-space* both created and bounded by the range of available/plausible (Wiek, 2005) and promising options by engaging stakeholders to identify sustainability's important dimensions in a project context "and the limits and thresholds associated with them" (*ibid.*, 2008:427). See also Chapter 2.

Space for meaningful choice Any one of numerous points for decisions to be made throughout projects, involving the room to bring personal or plural perspectives into sustainability decision-making processes, whether existing or facilitated, where stakeholders would have real opportunity to consider long-term, local and contextualised choices in more individually-meaningful ways.

A type of *sustainability choice-space* to establish sustainability's roots more meaningfully in decision-making by engendering or facilitating an explicit opportunity for some kind of intentionally balanced or holistic consideration of the sustainability of a project and its tri-partite human, economic, and environmental or ecological impacts.

Opportunities for meaningful choice Any room for improving choices affecting sustainability, conceptualised as the available chances—whether taken or spent—for intentionally balanced or holistic consideration of what sustainability *could* mean to decision-makers in context. "According to Sen (1999), life opportunities should be understood in terms of a broad set of factors that support meaningful choice and the pursuit of the good life" (Howarth, 2007:660).

Problem-definition How one 'sees' or frames a decision-problem, including e.g., "Building an understanding of the problem: defining the problem-space, [and] Establishing some initial criteria for the goal" (Bardwell, 1991:605).

Problem-frames Problem-frames capture people's understanding as e.g., focus, level, and characterisation of a problem/issue for consideration. Problem-frames are accessible communication tools between two individuals in structuring and setting decision-problems (Bardwell, 1991; Buhl et al., 2019) in project decision-making.

Design problem-frames "complex sets of statements that include the specific perception of a problem situation, the (implicit) adoption of certain concepts to describe the situation, a 'working principle' that underpins a solution and the key thesis: IF we look at the problem situation from this viewpoint, and adopt the working principle associated with that position, THEN we will create the value we are striving for" (Dorst, 2011:525).

Problem-framing The way information and choice options are devised or designed, generated, and re/presented both to oneself and others in problem-solving and decision-making processes, including design, focused on the social-communicative aspect of problem-solving.

Design problem-framing "[T]he creation of a (novel) standpoint from which a problematic situation can be tackled" (Dorst, 2011:525). This involves "an

interplay between diverging exploration of problem and solution space, and converging processes of synthesizing and selecting. …design treats both the problem and the solution as something to be explored" (Lindberg *et al*., 2011:4).

Problem-solving A systematic process of defining a *decision-problem* (an issue, problem, or challenge) and creating a solution (cf. Bardwell, 1991, Newell and Simon, 1972). "If 'problem-solving' consists of 'trying to move the world in the desired direction,' it must ultimately eventuate in a decision—a 'commitment to a course of action that is intended to produce a satisfying state of affairs (Yates *et al*., 2003)' (Brest and Krieger, 2010:10-11)."

Problem-space The available socio-cognitive space for various characterisations or framings of the decision-problem to be formed or emerge. Problem-space potentially bounds the available *choice-space.*

Sustainability problem-space The available socio-cognitive 'space' for various characterisations or framings of a *decision-problem* to be formed or emerge. It is nested within a wider *decision landscape* and inherits its characteristics and features. The available *sustainability choice-space* is potentially bounded by the stage-setting *problem-space,* inheriting its features.

Problem-structuring A twofold action or process involving, 1) Organising the *decision problem* by shaping a *problem definition* or understanding using, e.g., a cognitive map to outline important and relevant aspects; and 2) Managing the problem-structuring process: "To effectively problem-solve, then, one needs some content; familiarity with content is the stuff of which maps are made. One also needs a meaningful coding and organization of that content, i.e., structure. Finally, one needs ways of managing or dealing with and acting on that information [through] strategies for redefining the problem" (Bardwell, 1991:605-607).

Project decision-landscape The entire scope and lifespan of the BD&C project and incorporates whole sphere of project decision-making.

Sustainability "[T]ransforming our ways of living to maximize the chances that environmental and social conditions will indefinitely support human security, well-being and health" (McMichael, 2003; in White, 2013:214). "[T]he possibility that all forms of life will flourish forever" (Ehrenfeld, 2005:24). See also Chapter 2, Table 5.

Sustainable development Development (improving current conditions) that meets the needs of the present without compromising the ability of future generations to meet their own (Brundtland definition, UN-WCED, 1987). "Three contributory elements of sustainable development: community welfare, economic sufficiency, and environmental enhancement (Halliday, 2007:5)". See also Chapter 2, Table 5.

Value Value is typically a more 'objective' property (Mills, 2013) of relative desirability or worth ascribed to an object or goal, described as "the relationship between satisfying a need and the resources consumed in doing so" (BSI, 2000), and sometimes associated with financial quantification of goods, assets, and services.

Value equation Value equations, such as those reviewed and used in Mills (2013) (e.g., BSI, 2000; Kelly et al., 2004), have been useful for describing relations between factors giving rise to conceptions of value, such as individual's judgement of the best balance between give/get (Mills, 2013).

Values, Human Values Relatively stable socio-cognitive constructs representing individual and subjective worth, meaning, and import, expressed as ideals and/or goals; have relatively universal aspects; and are accessible and measurable (cf. Cheng and Fleischmann, 2010; Schwartz, 2012).

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Appendix 2 Literature Review Appendices

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Appendix 2.1 Grounded Thematic Narrative Literature Review Method

Abstract

Narrative literature review is an established method for objectively examining, evaluating, summarising, and synthesising existing knowledge to identify knowledge gaps and avoid duplication. Narrative review methods provide a recognised tool and straight-forward methods that are quicker than systematic reviews and more robust than rapid review or scoping methods. However, very few methodological studies include procedures for adapting the standard narrative review methods to align with the ontological and epistemological foundations of larger research projects and their methodology and methods. This method intends to fill that gap. A grounded, thematic version of narrative literature review method is introduced which aligns with the ontology and epistemology of a larger study using a case-based grounded approach.

1. Introduction

Research methods in building design and construction practice are not well-advanced in qualitative methods despite the advent of journals dedicated to interdisciplinary qualitative and social research methods.[1] This contrasts with qualitative methods in management, decision-making, and medical practice, which are significantly advanced, well-established, and provide rich sources of robust methodological literature and evidence of its application.[2] Adopting qualitative review methods from other fields of qualitative practice research is a recognised procedure and helps to provide greater transparency, replicability, and robustness in building design and engineering practice.

The purpose of this appendix is to provide guidelines for adapting the standard narrative review method to critically explore literature towards identifying and defining knowledge gaps to construct relevant, situated research questions linked to pertinent debates in the literature. Correspondingly, the intention is the method can be used to explore, select, examine, and interpret literatures that address the contextual dimensions, structures, processes, and/or components of phenomena in AEC design and management. This method and the literature review that employed it are part of a larger research project, which is reciprocally informed by these outcomes. The ambition of this appendix is to help advance qualitative methodology and research quality.

To overcome a perceived lack of rigour in qualitative design and construction research, a short examination of relevant review methods is also included. It is guided by a specific review question, where defining an appropriate epistemology helps to establish suitable methods to ensure knowledge claims are logically and epistemologically consistent. Accordingly, the narrative review method adopts grounded, thematic analysis and presentation techniques with mixed sampling. A secondary aim is to promote research quality by providing rigorous, linked research philosophy, questions, methods, analysis,

[1] *e.g.* Int. J. Qualitative Methods; Qualitative Research; Qualitative Research Journal; Int. J. Social Research Methodology; Sociological Methods & Research, etc.), as well as aggregators (e.g. Qualitative Report Guide to Qualitative Research Journals

[2] *e.g.* NHS Centre for Reviews and Dissemination, Cochrane Collaboration methods and reviews, BMC Medical Research Methodology, and several qualitative medical research journals.

and presentation for improved validity, reliability, replicability, and applicability. From it, a solid foundation is formed from which new research aims and objectives can be formulated to design new research and indicate where to begin generating data to answer those questions. This was taken as the main 'Point-of-Departure' or 'Line-of-Argument' to begin investigating sustainability decision processes in BE development.

Following from the introduction, a logic-led approach and strategy are outlined. They provided the groundwork to inform the design of review questions, select an appropriate review method, outline search and sampling methods, and provide inclusion-exclusion criteria. Following this, lessons learnt from applying the method are provided, followed by reflections, limitations and suggestions for improvement.

2. Ontological and epistemological foundations

A critical intersubjective pluralist ontology was adopted for the research. It holds that there is no one single right or wrong way of knowing, but a world in which knowledge of it is perceived on a spectrum dependent on the perceiver, ranging from independent multiple alternative human constructions, to collectively shared understandings of reality that are mediated by perceptions and beliefs, which can be fallible and incomplete. It is the context and agents that must critically evaluate which ontology represents their version of reality. So too is it a researcher's responsibility to identify not only their ontological and epistemological views but also and more importantly those employed in the research, which necessitate assessment as being appropriate and logically consistent with the research methods and nature of the knowledge being generated and theorised. The manifestation of multiple ontologies is itself logically inconsistent with one single ontology being more accurate or correct than any other, but is logically consistent with intersubjective pluralism, so long as that world is the subject of shared and intersubjective agreement. However, it must be prefixed as 'critical' to prescribe careful, contextualised evaluation as to an appropriate positioning on a perception-knowledge spectrum.

3. Logic model and components

A review-specific logic model was developed per Harris et al. (2018)[3] as an initial conceptual framework to establish a point-of-departure from initial searches and to conceptualise the review focus, which was then used to select review method. The purpose of a logic model is to "communicate the underlying 'theory' or set of assumptions or hypotheses […] about why it is a good solution to an identified problem (Schmitz and Parsons, 2004)." Moreover, logic models are considered useful in literature review processes because, "they can aid in the conceptualization of the review focus and illustrate hypothesized causal links; identify effect mediators or moderators; specify intermediate outcomes and potential harms; and justify *a priori* subgroup analyses when differential effects are anticipated (Anderson et al., 2011)." It can then be used to "explain the possible relationships between concepts in general terms (Harris et al., 2018)."

To construct the logic model, sequential iterations of logic were employed to, 1) analyse inferences identified in an early, key literature source in decision-making; 2) unfold and conceptualise its components; and 3) illustrate potential causal links (Anderson *et al*., 2011). In this case, potential basic causal links are identified, mediators in decision-making are sought, and *a priori* subgroup analyses are initially mapped in the model. In this way, grounded, linked chains-of-evidence could be sought and tied to initial logic through logically consistent methods, thereby clearly establishing initial research

[3] See also Schmitz and Parsons, 2004; Anderson *et al*., 2011; and Rohwer *et al*., 2017;

foundations in a logic chain, which could be developed later as evidence and theory is developed.

In well-cited publication on multi-level processes, drivers, and barriers of sustainability, Adger and Jordan (2009) pinpoint a principal underpinning factor: that the "*processes of decision-making* directly affect the sustainability of their outcomes (2009:6, authors' emphasis)."[4] This was taken as the main 'point-of-departure' or 'line-of-argument' to begin investigating decision processes in architectural design as they concern sustainability as one among other goals.

In the first logic iteration, decision-making in BE design can be considered a human process that has outcomes which can contribute to human and environmental sustainability to a greater or lesser extent. In a second iteration, a closer examination of the concept of 'human decision-making process' identified three components: the human agent(s), the act(s) of decision-making, and the process(es): the agent conducts the act in a course of action with some result; together these comprise the process. Third, if an agent in the context of BE development can be said to be acting to a certain extent with free will (i.e. they are not a machine-controlled brain in a vat), then it can be argued that, under their own control, the agent undertakes the act of decision-making in a process of selecting a course of action encapsulated in a 'decision', forming the basis of an outcome which can contribute positively or negatively to human and environmental sustainability. Accordingly, fourth, the initial point-of-departure can be modelled as an agent-centred, process-inputs-interactions-outcomes. In summary, the agent engages in a process of

Table 1 Components of a Logic Model

- the human agent(s),
- the agent(s) engaging in a decision-making process
- the input(s) into the decision-making process, including a (perceived) need//requirement in the form of a preferred outcome
- the forming/formulation of inputs
- the act(s) of decision-making (as selecting a course of action to fulfil a need)
- the agent's interaction with the inputs to select a course of action / make a decision
- a 'decision' which encapsulates the selected a course of action as an output of the process
- the possible articulation//communication to others of the decision
- the outcome(s)

decision-making that has inputs, including a (perceived) need//requirement, with which the agent 'interacts' to select a course of action, forming the basis of an outcome, encapsulated in a 'decision', which the agent may articulate//communicate to others to fulfil. The components of a model are summarised in Table 1.

Further iterations point to rich(er) ground. In a fifth iteration, applicable to the logic model is the notion that the human agent has some impact on the Process-Inputs-Interactions portion that consequently affects, and perhaps causes, the outcomes. In other words, acts of volition have an originating, human actor who undergoes some form of cognitive processing, even if the volition originates through habit or emotion. Finally, this suggests decision processes and their inputs may have origination in human cognitive processing, which further prompts the argument that agents' cognitive processing may be

[4] This was identified during preliminary stages of the research as part of an initial 'starter-set' (Wohlin, 2014) which provided a conceptual entrée into a complex field (Kools et al., 1996).

subject to inputs or drivers and impacts. Thus, it can be asked, which inputs or drivers of agentic cognitive operations in decision-making processes are foundational to, and/or underpinning, decisions with greater or lesser sustainability outcomes? The summarised logic model used in the target literature review is shown in Table 2.

Table 2 Summarised Logic Model
If the "processes of decision-making directly affect the sustainability of their outcomes" then agents (e.g. designer and client) engage in a process of decision-making that has inputs, including (perceived) needs and/or requirements, with which the agents 'interact' to select a course of action, encapsulated in a 'decision' as a process output, forming the basis of a decision process outcome, which the agent may articulate and/or communicate to others to fulfil.

To test its usefulness, the model would be orderly and coherent, logically consistent, plausible, and express an explanatory power greater than its summed constituent parts. The model can then be used to examine literature, form theoretical frameworks, and inform research design (cf. Anderson et al., 2011; Harris et al., 2018). It suggests an interpretive, constructionist epistemology that is consistent with critical intersubjective pluralist ontology. This is important because it forms the preliminary conceptual foundations of a multi-year programme of research. To follow Anderson *et al.*'s (2011) justifications, an illustration of potential causal links is outlined in Table 4 (below), which "illustrate hypothesized causal links; identify effect mediators or moderators; specify intermediate outcomes and potential harms; and justify *a priori* subgroup analyses when differential effects are anticipated (Anderson et al., 2011)" (see Table 3).

Table 3 *A priori* groups and subgroups	
1	Decision-making process
2	Actors as process agents
3	Process Inputs (potentially as item 6)
4	Process interactions/conduct
5	Decisions as process outputs
6	The role of values and/or frames therein

Table 4 Logical Causal Links		
The logically identifiable causal links		**Evaluation**
A	Assuming that *people* are the agents making decisions in decision-making processes, Therefore,	Logical Assumption
1	Either something about the decision-making process is responsible for the outcomes being more/less sustainable, regardless of the decisions taken, i.e. the decision-making process causes unsustainability, not the outcomes;	Implausible and unlikely (but logical)
2	Or that the decisions directly affect the sustainability of their outcomes and not the processes, i.e. the decision-making process and the decisions are unrelated; i.e., decisions cause unsustainability, not the outcomes (implausible and unlikely);	Implausible and unlikely (but logical)
3	Or all outcomes of decision-making processes are inherently un/sustainable regardless of the process or the decisions; i.e., un/sustainability as a property of all 'outcomes' regardless of actor, process, or decision; i.e., there is no cause, only property; i.e., outcomes = un/sustainability (implausible and unlikely);	Implausible and unlikely (but logical)
4	Or all outcomes of decision-making processes are predestined to be un/sustainable regardless of the agents, process, or decisions; i.e. outcomes were unsustainable before they existed, or something else caused unsustainability before agents, process, or decisions (implausible and unlikely);	Implausible and unlikely (but logical)
5	Or something about the decision-making processes directly affects the decisions which directly affect the outcomes which are more or less sustainable; i.e., the process 'causes' the decision which 'causes' the outcome which has the property of being more or less sustainable (plausible and likely);	Plausible and likely and logical
6	Or that the outcomes of decision-making processes are unrelated to the decision or the process and un/sustainability is caused by something else other than the decision; i.e., a third-party agent/event/source caused the outcome to be un/sustainable regardless of the agent/process/decision (plausible and possible/not unlikely).	Plausible and possible/not unlikely
Then		
A	The assumption that sustainability is a property of the outcomes from decision-making processes is logical, plausible, and likely.	Logical, plausible, and likely
B	**Group analyses** (analysis of the decision-making process itself) or **subgroup analyses** (analysis of a smaller portion or component of the overall decision-making process and its outcomes) are two ways to help understand the causes of un/sustainable outcomes.	Necessary
C	**Differential effects** can be anticipated from adjustments to the decision-making process itself and/or	Logical and plausible
D	**Differential effects** can be anticipated from adjustments to a smaller portion or component of the overall decision-making process such as the actors, inputs, process interactions/conduct, and/or decisions	Logical and plausible

One further assumption that demands later attention is that decision processes concerning Adger and Jordan's (2009) sustainability, i.e., governance, are sufficiently like sustainability in BE design and development. One argument is that the governance of sustainability at a broader level of analysis is precisely concerned with the outcomes of decisions made during the planning and development process involving BE design. The outcomes of BE design decisions are sufficiently large and therefore impactful to be entailed or subsumed by concerns at the governance level of analysis. Another argument would permit that the levels of analysis—governance versus building design—are sufficiently different conceptually and processually to warrant further examination. It is plausible that the two arguments are equally accurate. Thus, the model, and literature based on it, would (need to) account for the actors, inputs, and interactions/conduct, the decision-making process, its 'construction', and inputs responsible for its effects, and considerations that the decision-making outcomes in-and-of-themselves may not be the sole source of un/sustainability (i.e., a product of compounded factors which may result from and potentially go beyond decision-making). This model and the review findings can

then be used to "explain the possible relationships between concepts in general terms (Harris et al., 2018)."

Forming the conceptual core of a theoretical framework, this is included in the Main Thesis (§2.6) with a developed logic model characteristics based on findings, such as context; approach; potential influencing factors; outputs; and outcomes in short, intermediate, and longer-terms (Anderson et al., 2011). Consequently, a logic-driven approach to the literature was adopted to, 1) identify theory concerning decision-making processes relevant to BE sustainability; 2) distinguish key human inputs into, and interactions in, them; 3) account for the outcomes of building design as a planned human activity (cf. Ajzen, 1991) in a way that addresses aforementioned factors: process-inputs-interactions-outcomes (or PIIO). With it, broader interdisciplinary literatures concerning foundational, underpinning processes of human influences in decision-making processes were identified and examined.

4. Strategy

Following from the point-of-departure and logic model, a review strategy was developed to critically examine literatures across several disciplinary boundaries. Its purpose was to identify existing concepts and theory towards developing an approach to researching and understanding sustainability deficits via decision-making processes with findings that could be transferred into BE design. An integrative approach was taken with a long-range, wide-angle lens to embrace a variety of relevant social scientific and humanities literatures and examine concepts not traditionally associated with sustainable planning and building design. This allowed existing theory and methods from other fields to be combined in new ways (Trafford and Leshem, 2008) to investigate an old problem—sustainability via sustainable design—with a different perspective: that of human-originated influences. By critically examining literatures that concern management and organisational studies; human interaction and cognitive processing; and design; new understandings can be facilitated of the individual and interpersonal factors in sustainability decision processes. Confining the study to individuals might ignore settings and/or contexts and the potential of interpersonal, dyadic, or group processes to impact sustainability outcomes. A focus too broad on groups and organisations overlooks the point that humans make decisions in organisations, not the organisations themselves, thereby missing out the potential to illuminate underlying or underpinning decision process inputs and interactions. Accordingly, a human-centred focus that is grounded in coherent, consistent logic and links immediate context with broader human-environment impacts thereby provides an integrated, conceptual approach to reviewing literature and new research. It responds to calls for approaches to address a wider variety of perspectives, stakeholders, and consequences (e.g. Moe, 2007; Hedlund-de Witt, 2012). This focus, approach, and strategy begin pointing to gaps in the debate, which begins to suggest review questions to address those gaps.

5. Review questions

Because the broad focus of the study was clear from the start, review questions to situate the main study and identify knowledge gaps were constructed that capture the approach, strategy, and focus. These are shown in Table 5.

Table 5 Guiding Review Questions	
MAIN QUESTION	**What can a human factors and/or influences approach to decision-making contribute to building design concerning sustainability?**
Q1	How does literature explain the determinants of, and influences on, human behaviour as they directly impact decisions affecting sustainability outcomes of projects?
Q2	More specifically, what underpinning, foundational, human factors and/or influences can be identified in relevant literatures applicable to decision-making processes for built environment sustainability?
Q3	Can they address pervasive, individual and interpersonal processes in action, whilst balancing complex social-ecological impacts commensurate with current and predicted global environmental change?
Q4	Do the findings constitute a knowledge gap that requires new research?

The main question is supported by four focusing questions to search existing research for determinants of, and influences on, human decision-making behaviour that are underpinning or foundational and concern pervasive, individual and interpersonal processes that can address complex social-ecological impacts. These questions point to associated aims and objectives. The questions also helped mould five forms of quality criteria to assess research sources and evaluate the review outcome, see Table 6. Furthermore, these quality criteria also provided useful inclusion-exclusion criteria to later support the main criteria and help focus the reviews.

Table 6 Review Quality Criteria	
ASPECT	**CRITERIA**
Role	Informs theory; potentially identifies knowledge gap
Domain	Underpinning//foundational; underlying individual and interpersonal processes; decision-making and its processes; built environment sustainability
Focus	First, Long-range, wide-angle lens on fields and disciplines, broad approaches, and potential for wide impact; Second, increasingly narrow, tight focus on specific variables and associations sought, i.e., sustainability + values + frames + design and/or project + decision-making
Relation	Linking, relevant, applicable, pervasive, timely, logical
Quality	A) Meaningful, appropriate, feasible, and implementable (Harris *et al*., 2018) B) Reliable, Relevant, Applicable

6. Review aims and objectives

Following from the questions, the aim of this study is twofold. First, to provide the context and setting for new research concerning a deeper, more robust approach to sustainability that incorporates a greater appreciation for pertinent fundamentals of human factors in sustainable design decision-making processes (or SDDMP). Second, to define key links that connect the broad context of sustainability to finite constructs within human decision-making processes that could be studied in detailed research.

The initial intention is to achieve breadth rather than depth. The objectives, with which the text structure aligns, are fourfold. The first is to explore the current problem-context of decision-making for BES. This includes problematising sustainability decisions, identifying decision literature problem-contexts, and contextualising decision-making processes relevant to SD (§2.1). The second objective is to interpret and integrate the literature that scaffolds and then structures the foundational individual and interindividual processes of SDDMP (§2.3). This then provides the context for a pilot study. The third objective is to identify knowledge gaps in this literature commensurate with a social change and research agenda, suggesting future research agendas (§2.3-2.5).

In concluding these review findings, a theoretical framework is outlined (§2.6) for a deeper, more robust approach to sustainability, thus closing the loop on the aim, as a fourth objective. Finally, the fifth objective is to discuss the findings of the review and highlight any limitations of it, or gaps in it (see Chapter 2, also §2.7). As such, the review was employed to refine initial research questions and aims; to guide new research; and indicate where to begin generating data to answer those questions. To begin, an explanation of the literature selection, analysis, and synthesis methods follows.

7. Method selection

Several variations of qualitative reviews are outlined in meta-reviews (see e.g., Barnett-Page and Thomas, 2009; Cronin et al., 2008; Thomas and Harden, 2008; Dixon-Woods et al., 2005; Ankem, 2008). An iterative meta-review of qualitative review methods was conducted alongside the development of inclusion-exclusion criteria for an appropriate review method. Table 7 provides a list of key selection criteria, with the key criteria mapped into an evaluation matrix in Table 8.

Table 7 Key selection criteria for review methods (Adapted from Barnett-Page and Thomas (2009))

An applicable review method for this study should provide techniques to:

1. Problematise the literature toward the formulation of research questions and theoretical framework for future research.
2. Efficiently analyse and synthesise large bodies of literature across several disciplines.
3. Appraise the quality of literature by the extent to which it informs//contributes to theory.
4. Develop inclusion and exclusion criteria for the literature.
5. Respect or respond to ontological and epistemological approaches of the research (i.e., relativist, social constructionist, etc.).
6. Examine whether conceptualisations and theories in their intended context were applicable to and meaningful in other contexts.
7. Permit/Conduce an iterative theoretical sampling of studies throughout the review process (e.g., as in 'pearl-growing' or snowball sampling).
8. Facilitate a conceptual 'map' of the contributions from qualitative studies (e.g., as Qualitative Meta-Summary).
9. Produce findings to serve as a basis for further research.
10. Provide a transparent 'audit trail' demonstrating the trustworthiness of the synthesis.

Table 8 Literature review method evaluation and selection

	TYPE	Meta-ethnography	Qualitative Meta-study	Qualitative meta-summary	Critical interpretive synthesis	Framework synthesis	[Critical] meta-interpretation	[Critical] content analysis
	Author	Dixon-Woods, M., et al. (2005).	Walsh, D. and S. Downe (2005). Dixon-Woods, M., et al. (2005). Thomas, J. and A. Harden (2008).	Sandelowski and Barroso, 2007 Bryant, T. and K. Charmaz (2010).	(Dixon-Woods et al., 2006; Barnett-Page and Thomas, 2009)	Pope, Ziebland and Mays (2000), and draws upon the work of Bryman and Burgess (1993) and Miles and Huberman (1984). Noyes, J., et al. (2016).	Weed, 2005; in Barnett-Page and Thomas, 2009. Olsen, W. (2004).	Evans and Fitzgerald 2002; Suikkala and Leino-Kilpi 2000; in Barnett-Page and Thomas, 2009
	Ontology and/or Epistemology	Objective idealism	Subjective idealism	Subjective idealism	Subjective idealism	Critical realism	[Research-based]	[Research-based]
	Approach to quality assessment	Noblit and Hare don't discuss quality assessment; a later meta-ethnography used an amended version of CASP but only referred to studies being excluded on the basis of lack of relevance or because they weren't qualitative	The meta-method aspect of meta-study looks at the 'epistemological soundness' of studies' research methods		Quality of research judged as the extent to which it informs theory, or relevance of the literature to the research	Ten criteria used, see Barnett-Page and Thomas, 2009		
Capabilities								
1	Problematize the literature toward the formulation of research questions and theoretical frameworks for future research Aid refinement of the research question Serve as a basis for further research, analysis, and synthesis Iterative, organic development of theoretical framework	YES	YES	YES	YES	No	Potentially	Potentially
2	Analyse and synthesise large bodies of literature across several disciplines	Potentially	YES	YES	YES	Potentially	Potentially	Potentially, too detailed?
3	Quality of the method judged be relevance to research area and questions, and informs theory	Unlikely	Potentially	Potentially	YES	Potentially	Similar to CIS	Yes, but potentially not specified or structured well enough to help the novice
4	Develop inclusion and exclusion criteria for the literature	YES	YES	YES	YES	YES	YES	YES
5	Respect or respond to ontological and epistemological approaches of the research; i.e. critical realist, social constructionist, …	No, inappropriate ontology	Potentially too subjective and idealistic	Potentially too subjective and idealistic	Fairly closely, but potentially too subjective and idealistic	Ontology potentially problematic	YES	YES
6	Focus on meaning in context; contextualises findings	YES	Potentially	Potentially	YES	Potentially	Potentially	YES
7	Iterative theoretical sampling of studies for synthesis can occur throughout the review process	YES	YES	YES	YES	Potentially	Potentially	YES
8	Produce a "map" of the contents of qualitative studies	Potentially	Potentially	Potentially	Potentially	YES	Potentially	Potentially
9	Provide a transparent audit trail demonstrating the trustworthiness of the synthesis	YES, based on researcher's rigorous record-keeping and memoing	YES, based on researcher's rigorous record-keeping and memoing	YES, based on researcher's rigorous record-keeping	YES, based on researcher's rigorous record-keeping , memoing	YES, based on researcher's rigorous record-keeping and memoing	YES, based on researcher's rigorous record-keeping, memoing	YES, based on researcher's rigorous record-keeping, memoing

Based on these parameters, four methods were shortlisted: scoping study/review, traditional narrative review, systematic review, qualitative (meta-)synthesis. An initial informal survey of decision literature showed that research on the topic is vast; dispersed across several large, established, and overlapping disciplines; and employed many methodologies. Therefore, systematic review was inappropriate because it entails a complete, systematic cataloguing of all related studies, including quality and methodology along pre-determined steps, which is beyond the needs of this exploratory scoping review (Cronin et al., 2008; Walsh and Downe, 2005). It was then considered more important to attempt both prose and graphic mapping of knowledge in terms of breadth, whilst delaying specifying appropriate study designs (Arksey and O'Malley, 2005; Cronin et al., 2008). Quality assessment criteria have been adopted to ensure relevance, so a pure Scoping Study seemed less applicable or robust. Furthermore, whilst the review questions are clear, the overall research questions were not; their definition alongside appropriate research methods is intended based on the outcomes of this study (Arksey and O'Malley, 2005).

Because the principal function here is exploratory gap-identification, the breadth of topic coverage is important, whilst providing depth on each concept/topic is less so. The simple identification of existing research on a topic, characteristic, or concept in literature inherently indicates that knowledge gaps may be unlikely unless the topic/concept is combined with another. Together, these points suggest the need for an inductive and hermeneutic approach that allows iterations of sampling toward theoretical saturation, such as a grounded, integrating or synthesising approach (Walsh and Downe, 2005). Adopting such an approach is logically compatible with both qualitative (meta-)synthesis (*op.cit*.) and traditional narrative review (Ferrari, 2015; Cronin et al., 2008) and adds rigour to an exploratory scoping review. However, qualitative evidence syntheses are normally used for reviews of primary research to synthesise or integrate findings to establish new theory or support arguments for new interventions. This was deemed inappropriate because the objective is gap-identification, not theory development. Such integrative, explicit, and transparent links can be established and maintained through rigorous narrative review. Additionally, thematic synthesis is "a tried-and-tested method that preserves an explicit and transparent link between conclusions and the text of primary studies, […] developing 'descriptive themes' and generating 'analytical themes' (Thomas and Harden, 2008)."

Narrative reviews are a well-established method for knowledge synthesis and gap identification (Ferrari, 2015). However, they may prematurely eliminate potential sources of interest if the landscape is insufficiently scoped. Therefore, the aim of a qualitative scoping review is combined with grounded, thematic-type of narrative literature review to contextualise, position, thematise, focus, define, and evaluate decision-making, its human-centred characteristics, and forms. A lens is applied to each to identify aspects of human factors and/or influences concerning sustainability, which provides an additional contextualising and relevance tool. It is thus employed to examine, evaluate, and map large, overlapping bodies of literature across several disciplines. Narrative review method adopting grounded thematic techniques fulfils all criterion with the exception of two surmountable points, due partly to limitations of traditional review techniques (Dixon-Woods et al., 2006). Firstly, the characteristics of idiosyncratic searching and purposive sampling used in narrative reviews may not be explicitly reproducible and auditable for all researchers. These factors can be mitigated through rigorous, linked record-keeping, memoing, and reporting. This is compatible with early-phase selection of case study research and grounded approaches adopted for the larger research project. Secondly, although references to this method neglect to offer explicit guidance on suitable concept mapping, techniques can be borrowed from alternative methods with similar epistemological bases (e.g. Daley, 2004; Wheeldon and Faubert, 2009). The epistemological assumptions that underpin a grounded thematic narrative review method were a defining factor. Its compatibility with the broader research approach as a

constructionist method and the ability to inform a theoretical framework (useful in further research phases) (Barnett-Page and Thomas, 2009) were relevant to its selection for this study. The method and techniques are described next.

8. Method description and procedures

The overall research has adopted a Case Study research structure that is overlaid or layered with, and built-up through, borrowed analytical techniques from cognate research methods and traditions. A 'grounded approach' based in case study methodology allowed for the possibility and development of several problem-specific options for selecting data generation and data analysis methods to develop from early stages. This was entirely commensurate with Yin's (2014) characterisation of an adaptive approach to prevent foreclosing on changes arising or needed in the research, which might be seen as opportunities rather than threats (Yin, 2014 :32, 63, 74).

As the core review method set within that research structure, four sources for narrative review methods were identified (citation numbers in brackets): Baumeister and Leary (1997); Green et al. (2006) (c.520), Cronin et al. (2008) (c.672), and Ferrari (2015) (c.56). The former is becoming increasingly dated, whilst Cronin *et al*. has been re-established in Coughlan et al. (2013) among others; Ferrari provides additional strength concerning analytical rigour and review structuring. Two sources were identified for prefixing scoping study techniques: Arksey and O'Malley (2005) (c.4338) and Pham et al. (2014) (c.297); the former was used primarily because of its accessibility, whereas the latter is a 'review of reviews' and is unnecessarily broad and detailed for current use. Two sources were identified to supplement grounded thematic review techniques: Barnett-Page and Thomas (2009) (c.943) for both and Thomas and Harden (2008) (c.2072) for thematic synthesis techniques. They are supplemented by Strauss and Corbin (1998), Charmaz (2006) and Braun and Clarke (2006) for grounded theory and thematic analysis, respectively.

The purpose of this review is to explore the relevance of concepts (2008:41) across decision-making and compile a picture of current knowledge that evaluates the potential of a human factors and/or influences approach. Therefore, the focus is not on comprehensiveness of traditional systematic reviews in terms of depth, but in terms of breadth of coverage and relevance (Cronin *et al*., 2008). An outline of the method employed here is shown in Table 9. Thus, a narrative literature review method was adopted with grounded thematic techniques because it is well-established for identifying knowledge gaps and integrating review findings for further research (Ferrari, 2015). Cronin's (2008) base method is combined with grounded, thematic-type of narrative literature review (Barnett-Page and Thomas, 2009; Thomas and Harden, 2008) to understand and evaluate decision-making research, and its human-centred characteristics. A grounded, inductive-deductive loop (Corbin and Strauss, 1990; Strauss and Corbin, 1998) (Figure 1) helps link these findings into the main study as the last portion of the first of three main inductive-deductive loops towards abductively deriving the most plausible explanation (*ibid*., 1990; 1998). A thematic lens (Braun and Clarke, 2006) is applied to each to understand aspects of human

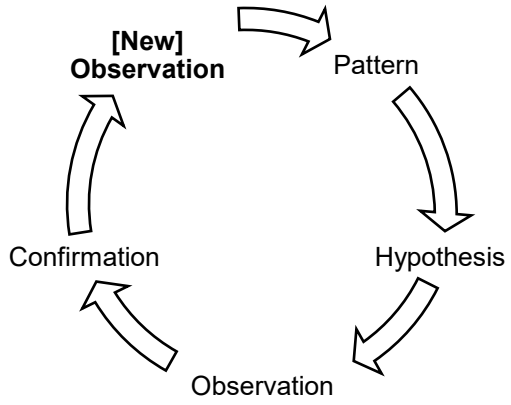

Figure 1 Basic inductive-deductive loop

influences affecting sustainability, which provides an additional tool to help establish relevance and contextualise the results.

Table 9 Grounded thematic narrative review procedures (adapted from Cronin *et al*., 2008)

STEP 1	**SEARCH, SELECT/SAMPLE, FAMILIARISE and ITERATE**
1.1	Search, Record keywords, and Search/sampling methods according to the method outlined below in Section 9-10, with review inclusion-exclusion criteria in Table 10.
1.2	Familiarise and Sense-make, focusing first on the literature's title, abstract, and conclusion.
1.3	Assess relevance and quality.
1.4	Organise (roughly group, code, and thematise; categorise). Iterate.
STEP 2	**QUESTION, ASSESS, RECORD/CAPTURE and ITERATE**
2.1	Review content using a *preview, question, read, record* (PQRR) method
2.2	Assess five factors using TAPFOR (title, author, purpose, findings, outcomes, reflections).
2.3	Group, code, and thematise; categorise.
2.4	Record key data in indexing systems (literature matrix and EndNote reference manager).
2.5	Capture and organise key data nuggets according to groups, categories, and themes. Iterate.
STEP 3	**ANALYSE: EVALUATE, APPRAISE/REFLECT, CAPTURE, REVIEW/REVISE LOGIC MODEL**
3.1	Analyse fundamental or key findings (per five factors), capture, evaluate for human influences; Constant comparison with initial Record/Capture.
3.2	Appraise using reflective summaries including key thoughts, comments, strengths, limitations, relevance, potential gaps; (Constant) Compare with Logic Model.
3.3	Review/Revise Logic Model based on Constant Comparison as necessary to account
STEP 4	**ITERATE / REPEAT**
4.1	Iterate/Repeat steps 1-3 until theoretical saturation is achieved and knowledge gap is identified.

9. Search and sampling method

A mixed, purposive sampling strategy was adopted per Patton (2002), Suri (2011), and Wohlin (2014). Three methods are consistent with the review method, logic, epistemology, and focus; in order of their deployment: 1) constrained snowball sampling (Wohlin, 2014) (also known as 'pearl-growing' (Barnett-Page and Thomas, 2009)); 2) purposive, theoretical sampling (Suri, 2011); and 3) emergent sampling (Suri, 2011). A constrained snowball sampling method combined the constraint concept from Lecy and Beatty (2012) and method by Wohlin (2014) and Suri (2011) to construct a start-set. It was narrowed into a focused-set, and then refined with purposive, theoretical sampling as advocated by Patton (2002) and advanced in detail by Suri (2011). During the review as new concepts were found, theoretical sampling was combined with emergent sampling (Suri, 2011) during writing and development. In this way, the review directly reflects the concepts and structures found in the literature, thereby ensuring concepts were sufficiently saturated and knowledge gaps were made evident. The main inclusion-exclusion criteria comprised six facets (guided by Arksey and O'Malley (2005) and Anderson *et al*. (2011)), outlined in Table 10.

For this work, the main inclusion criteria comprised five main facets. Literature should: 1) concern, or could be applied to, built environment design (e.g., permit interdisciplinary cross-fertilisation); 2) involve at least one uniquely identifiable decision-maker, but also apply to one or more or stakeholders (e.g. designer plus client or statutory authorities, etc.); 3) provide insight into the process and acts of decision-making via empirically derived theory; 4) handle complexity in terms of multiple decision inputs and multiple decision criteria (e.g. multi-source multi-type human and technical 'information' and

multiple requirements/needs); 4) handle context-specific factors regarding, a) individual differences in decisionmakers, such as capability and personality, and b) the decision situation/scenario regarding uncertainty, complexity, and temporal extension.

Table 10 Literature review inclusion-exclusion criteria

#	Criteria	
A	Concern, or be applicable to, built environment projects (e.g., permit interdisciplinary cross-fertilisation);	
B	Involve professionals and adults (e.g., not studies including or involving schoolchildren)	
C	Involve at least one uniquely-identifiable decision-maker, but also apply to one or more or stakeholders (e.g., professional plus client or statutory authorities, etc.);	
D	Provide insight into the process and acts of decision-making via empirically derived theory;	
E	Handle complexity in terms of multiple decision inputs and multiple decision criteria (e.g., multi-source multi-type human and technical 'information' and multiple requirements/needs);	
F	Handle context-specific factors regarding:	a) Individual differences in decisionmakers, such as capability and personality, and
		b) The decision situation/scenario regarding uncertainty, complexity, and temporal extension

More specifically, this review was exploratory and seeking to first establish boundaries and conceptualisations. An initial start-set of sources for a scoping and sensemaking study was compiled and reviewed during preliminary, research proposal phases based on prior exposure and professional experience.[5] This provided a "conceptual entrée into an otherwise more complicated area (Kools et al., 1996)": a multi-levelled, complex, dynamic overlapping of related fields. An initial start-set was comprised of important, germinal papers from previous exposure to sustainable development, production, consumption, and waste management; environmental decision-making; and environmental or sustainable design. For a focused start-set, initial keyword searches and combinations used related search strings such as 'sustainability,' 'sustainable design,' and 'decision-making.' It was developed according to Wohlin (2014) after identifying appropriate and consistent sampling methods. Three methods were considered consistent with the review method, logic, epistemology, and focus; in order of their deployment: 1) constrained snowball sampling (also known as 'pearl-growing' (Barnett-Page and Thomas, 2009)); 2) opportunistic, emergent sampling; and 3) purposive, theoretical sampling. A constrained snowball sampling method combined the constraint concept from Lecy and Beatty (2012) and method by Wohlin (2014) and Suri (2011) to construct a start-set. It was narrowed, focused, and refined with purposive, theoretical sampling advocated by Patton (2002) and advanced in detail by Suri (2011).

Three relevant justifications for snowball sampling, per Suri (2011), are that "it is particularly useful for capitalising on expert wisdom, identifying studies that are highly valued by different stake-holders, and identifying studies outside the academic mainstream (2011:69)." Emergent sampling and theoretical sampling are similar in that they both manifest grounded or inductive search. Emergent methods follow new conceptual leads as they arise, opportunistically, to grow the pearl. Theoretical sampling purposefully locates emerging concepts to explore "the dimensional range or varied conditions along which the properties of concepts vary (Corbin and Strauss, 1998:73; in Suri, 2011:70)." Taken in that order—snowballing to broaden and define boundaries; emergent sampling to build-up and develop relevant conceptualisations; and theoretical sampling for saturation of conceptualisations—these three methods are consistent with the pluralist, constructionist logic and grounded approach.

[5] This is relevant because it provides readers with a snapshot of the broader background and context in which the current review was situated and identifies the researcher's *emic* and *etic*.

Two criteria used to constrain the snowball for manageability were relevance and citation, examining germinal works first, to then snowball backward via references and forward via citations (Suri, 2011; Wohlin, 2014). Google Scholar and the university's Capita OneSearch were the main aggregators, supplemented by publisher-specific 'related articles' advertisements.[6] Relevance was the principal criteria, which, as Wohlin (2014) suggests, is valid particularly when the review targets a smaller area with very specific focus. As such, the number of relevant papers would naturally be smaller. Sampling was subsequently constrained by quality evaluation of sources by citation, explanatory power, and contribution to theory. Germinal/seminal and highly cited/influential papers in the area formed departure points for key topics and themes, after which the search snowballing expanded until boundaries of relevance and then quality were reached.

Several aforementioned fields of literature were initially identified to examine and construct a start-set (Wohlin, 2014). Through both prior exposure and personal knowledge (Greenhalgh and Peacock, 2005) and initial search of indices to (re-)establish a relevant start-set, initial keyword searches and combinations used search strings regarding "sustainability," "sustainable design," and "decision-making." These were broadly surveyed and the search developed using Wohlin's (2014) snowball sampling based first on keyword and search-string potential relevance and applicability to sustainability planning and design decision-making processes, and 'citation tracking' (both forward and reverse) (Greenhalgh and Peacock, 2005). Snowballing simultaneously responded to a holistic, integrated approach and synthesis as this interdisciplinary review needs. It should be noted that sampling criteria of potential sources were not precisely defined at the start of this exploratory review and emerged as part of it; therefore, this should not be confused with protocol-driven sampling (Greenhalgh and Peacock, 2005).

10. Search terms and procedures

Literature 'brought into' the review based on previous experience included (1) sustainability and sustainable development, with an initial foray into (2) pro-environmental behaviour, (3) values, and (4) decision-making. For the first wave of search terms, concepts and theories were identified in various streams of research starting with the core concepts that expanded on (1-4). It was quickly found that frames and framing were critical to decision-making, so the search then also addressed (5) frames and framing, and (6) any overlaps related to such research including (7) values and frames together, (8) their potential interrelationships. Several fields of literature were initially identified and broadly surveyed based on the relevance to the research questions, looking

[6] Such as T&F's "People also read", Sage's "Citing articles", ScienceDirect's "Recommended Articles" (produced by Elsevier), and Wiley's "Related" sidebars.

at the journal aims and scope, paper titles, and abstracts. The academic disciplines, bodies of literature, and literature topics initially reviewed are shown in Table 11.

Table 11 Disciplines, bodies of literature, and literature topics reviewed

- Values; in cross-cultural psychology; Interpersonal and/or individual psychology; in business and project management
- Frames in Decision-making, Cognitive linguistics, Media communication, Individual communication
- Decision-making and decision-making processes
- Environmental decision-making
- Environmental behaviour
- Sustainable consumption; Consumer studies
- Sustainable development, Education for sustainable development
- Sustainability science
- Architectural scholarship
- Design scholarship
- Design management
- Construction management
- Project management
- Management scholarship
- Organisational behaviour

Germinal, current, and relevant literature were selected and examined, then cross referenced and structured in spreadsheets (Appendix-2.1). After populating broad and then focused spreadsheets, it became obvious that criteria were (1-5) overly broad and required further refinement, and more importantly that no empirical research was initially found on (7-8), only prospective work hypothesising their potential relationships and effects. Based on associations found therein, the search focused on (9) any relations of values and/or frames to: (9a) sustainability and/or environmental decision-making, (9b) pro-environmental behaviour, which could point to related determinants of behaviour. Similarly, this was extended to (9c) decision-making and (9d) 'decision-shaping' behaviours and (9e) processes thereof, as described in the literature itself. This was also extended to focused searches in (4a) design decision-making, (4b) problem-solving, and (4c) related topics, some of which addressed interrelations such as problem-definition or problem-framing. Chapter 2 examines the core concepts, relationships, and approaches, alongside values-and-frames interactions and later literature which emerged during the research process on values-and-frames' relations with shaping decision processes and choice structuring based on key emergent factors.

Following the Table 10 criteria and above search terms, (A) journal aims and scope, (B) paper titles, and (C) abstracts were reviewed, evaluated, and these key facts recorded in spreadsheets (Appendix-2.2). Relevant journals and papers were long-listed according to (D) academic disciplines and (E) discipline relevance, then refined by (F) topic relevance and (G) specificity to the review questions and aims. Key concepts/constructs were identified by (H) concluding significance as apportioned by the authors, J) frequency of appearance, and K) their relation to the preliminary research question and problem as foundations and influences of stakeholder decision-forming and decision-processing behaviour in this context. Together these directed the refinement of the central research questions which consequently focused the literature review to pinpoint directly relevant research and identify knowledge gaps when no extant research could accurately, directly respond to the research question. This established the immediate literature context of the research, knowledge gap, and guided the main study research design.

The search initially began to construct a start-set (Wohlin, 2014) then focused-set with references in the authors' personal library in two locations. First, Dropbox cloud-based

file storage was searched with Copernic Desktop Search for both keyword title and full-text searches. These were added to the spreadsheet 'Literature Matrix' and ranked by relevance and citations as a measure of impact and import (Appendix-2.2). The second search was via EndNote reference manager, with results exported to the Matrix. Duplicates were manually removed. To continue with theoretical sampling, online and physical library searches were conducted using three principal search engines (in order of priority in producing successful results) Google Scholar, the university's OneSearch, and Google Search. This was later supplemented with focused index searches, such as ScienceDirect and Web of Science. Mind-maps were used to outline key concepts, authors, and interrelationships (e.g., Figure 2). Later as theoretical sampling started achieving initial saturation, key references were imported into EndNote and then directly into the writing and organised by concept/category/theme. The Matrix was later updated with the full selection of papers reviewed; the References section served as a record of relevant literature from the gap-finding literature review. Emergent literature following the above procedures was collected and listed, then shortlisted and added directly to EndNote.

To illustrate with a worked example, the procedures for creating start and focusing sets for the sub-set of sustainability/sustainable + design + decision-making are outlined below. The initial search strategy was to start broad and then focus by returning the broadest possible search set and not focus too closely, too soon. This first set was a personal-collection search constructed using the terms 'decision-making' then 'decision' then 'sustainable+development+decision-making' which returned 170 items. Once these were mapped into a matrix with basic information and each source 'focus' was being mapped, it became obvious that the net was cast too wide and the Start Set had too many sources that were broad in focus. Including 'sustainable+development+' without design or AEC was less useful; of the 170, only 18 mentioned design or AEC; see Appendix 2.2. These were stripped out into a new matrix and a new search begun with the narrower search string 'design+decision-making' and then 'design+decision' for sources addressing decision process and not decision-making process, etc. This search returned 47 personal-collection sources in total that were mapped along with manual addition of citations and focus. Once this first wave established a start set, each source was examined for a potential human factor and/or influence that played a part in the decision-making process, which was added to the Focus list. To ensure that valuable sources were not missed, online search engines were searched for 'design+decision-making' and then 'design+decision'. Definitions for key terms were sought from high-citation sources and thus began the pearl-growing. Many sources omitted recording operational definitions and the net was recast wider with specific search terms and snowballing. In summary, the quantities by stage are outlined as follows: Start=170; Interim=118 after removing duplicates and corporate marketing; +Decis=157 +Existg-v4 draft=176; Final pre field-work phase=47 (See Chapter 2, §2.3.5); early-mid field-work or 'transfer' stage=64 (See Chapter 2, Table 9, first 15 categories, §2.4; i.e., not including newer emergent literature).

11. Summary

The main findings from this review are summarised in Chapter 2 Literature Review. They focus on finite, underpinning, human decision variables, constraints, and opportunities from the broader perspective of project sustainability and impacts. Hence, the research is not about sustainable design *per se*. In this appendix, the review design and methods were introduced, alongside review inclusion criteria, search terms and procedures. Thus, using these methods, existing research is reviewed in Chapter 2, first, on the immediate and larger contexts of sustainability and sustainable development for AEC practice. Core factors about communicating and deciding about sustainability are then reviewed. Literature on values and their connections to frames and decisions conclude the literature search conducted for the first exploratory studies (§2.3-2.4). Based on key emergent

factors from both exploratory and systematic studies, the review then transitions into considerations of room for improvement as the core conceptualisation of the key emergent factors (§2.4-2.5), and the convergence of values-and-frames in the study of space for meaningful choice about sustainability (§2.3.5). These factors are then integrated into a framework (§2.6). Thus, outcomes from this review informed the larger research project in phases.

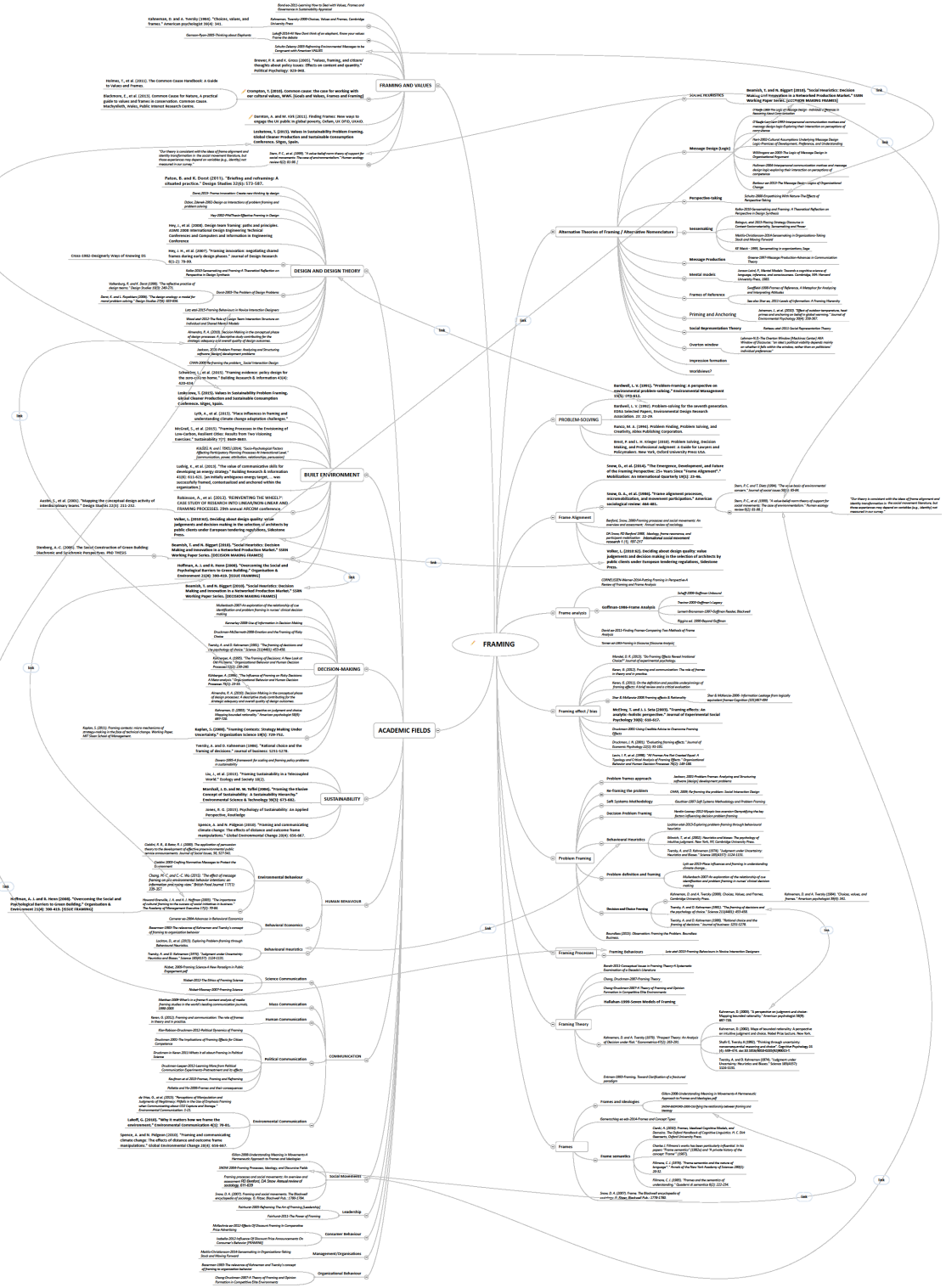

Figure 2 Example mind map of framing literature, outlining key concepts and authors, their relations and overlaps

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THOMAS, J. & HARDEN, A. 2008. Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology,* 8**,** 45.
TRAFFORD, V. & LESHEM, S. 2008. *Stepping Stones to Achieving Your Doctorate: Focusing on Your Viva from the Start*, Open University Press.
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YIN, R. K. 2014. *Case Study Research: Design and Methods,* Thousand Oaks, Calif, Sage Publications.

Appendix 2.2 Example Literature Review Matrices

Contents

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Appendix 2.2 Literature Review Matrices

Sample Matrix: ON DECK

Field	Reference		REMARKS: Conclusions - Results - Selected Findings - Implications - Limitations
DECISION-MAKING	**INSTITUTIONAL ANALYSIS and DECISION-MAKING:**		
	Ostrom, E. (2008).	Doing Institutional Analysis: Digging Deeper than Markets and Hierarchies.	**KEY TEXT**; CHAPTER
	Ostrom, E. (2010)	The Institutional Analysis and Development Framework and the Commons	**KEY TEXT**
	Ostrom, E. (2011)	Background on the institutional analysis and development framework	**KEY TEXT**
	DECISION-MAKING: INSTITUTIONAL-ORGANISATIONAL-GROUP-INDIVIDUAL		
	Kreitner, R. and A. Kinicki (2008).	Organizational Behavior	**KEY REFERENCE; LIBRARY BOOK;** Values, Value systems; decision-making, individual and group
	Buelens et al. (2011)	Organizational Behavior	**KEY REFERENCE; LIBRARY BOOK;** Values, Value systems; decision-making, individual and group
	Buchanan and Huczynski (2010)	Organizational Behavior	LIBRARY BOOK
	... see Dropbox\BTN\CONCEPTS\Decision-making		
	DECISION-MAKING: PERSPECTIVE of INDIVIDUAL DESIGNERS		
	DECISION-MAKING & SUSTAINABILITY		
	Arvai, J., et al. (2012)	Decision-making for Sustainability: A Systematic Review of the Body of Knowledge	**KEY REPORT**
	Bertels, S., et al. (2010)	Embedding sustainability in organizational culture: A systematic review of the body of knowledge	**KEY REPORT**
	~~Maser, C. (2012)~~	~~Decision-Making for a Sustainable Environment: A Systemic Approach~~	book; long, winding and rambling; not inmediately relevant
	Kibert, C. J., et al. (2011)	Working Toward Sustainability: Ethical Decision-Making in a Technological World	LIBRARY BOOK
	Cabot, et al. (2009)	Integrating Sustainability in Decision-Making Processes: A Modelling Strategy	
	Azapagic and Perdan (2005)	An integrated sustainability decision-support framework. Part 1: Problem structuring	MCDA for sustainable option choice
	DECISION-MAKING: DESIGN		
	Volker, L. (2010).	Deciding about design quality: value judgements and decision making	**KEY THESIS** "I define design quality as an overall value judgement of an individual stakeholder that is based on the interaction between the person and an (representation of an) object in the built environment. As a result of the interaction between the individual and the product, a value judgement is always accompanied by an affective response and an assessment about the level of quality or value of a product."
	d'Anjou, P. (2011).	An alternative model for ethical decision-making in design: A Sartrean approach	
	Almendra, A. R. and H. Christiaans (2009).	Decision-making in Design: a comparative study.	**KEY PAPER**
	Almendra, R. A. and H. Christiaans (2009)	Decision making in the conceptual design phases: a comparative study	**KEY PAPER**
	Hansen, C. T. and M. M. Andreasen (2004).	A mapping of design decision-making.	**KEY PAPER**
	Macmillan, S., et al. (2002)	Mapping the design process during the conceptual phase of building projects	
	DECISION FRAMING and EFFECTS		
	Chong, D. and J. N. Druckman (2007).	"Framing Theory." Annual Review of Political Science 10(1): 103-126.	**KEY PAPER**
	Kühberger, A. (1998).	"The Influence of Framing on Risky Decisions: A Meta-analysis." Organizational Behavior and Human Decision Processes 75(1): 23-55.	interesting
	Kahneman, D. and A. Tversky (1984)	Choices, values, and frames	related/relevant
	Tversky, A. and D. Kahneman (1986)	Rational choice and the framing of decisions	related/relevant
	VALUE(S)-BASED DECISION-MAKING		
	Hall, D. J. and R. A. Davis (2007).	Engaging multiple perspectives: A value-based decision-making model.	**KEY PAPER**
	Hall, D., et al. (2005).	Extending Unbounded Systems Thinking with agent-oriented modeling: conceptualizing a multiple perspective decision-making support system.	
	Hall, D., et al. (2003).	Developing a value-based decision-making model for inquiring organizations	
	Rangel, A., et al. (2008).	A framework for studying the neurobiology of value-based decision making.	
VALUES	**ORGANISATIONAL AND INDIVIDUAL VALUES; VALUE CONGRUENCE**		
	Fisher, Lovell and Valero-Silva (2010)	Business Ethics and Values	**LIBRARY BOOK; INTERESTING**
	Meglino and Ravlin, (1998).	Individual Values in Organizations: Concepts, Controversies, and Research	**KEY PAPER**
	McDonald, P. R. (1993).	Individual-organizational Value Congruence: Operationalization And Consequents.	**KEY PAPER**
	Gollan, T. and E. H. Witte (2014).	From the Interindividual to the Intraindividual Level	**KEY PAPER: MOTIVATIONAL CONFLICTS AND COMPATIBILITIES**
	Peloza, J. and R. Yachnin (2008).	Valuing business sustainability: A systematic review	**KEY REPORT**
	VALUES IN DESIGN AND DECISION-MAKING		
	Boztepe (2003)	The Notion of Value and Design	**KEY PAPER**
	Paton, B. and K. Dorst (2011)	Briefing and reframing: A situated practice [IN DESIGN]	**KEY PAPER**
	Iversen, O. S., et al. (2012).	Values-led participatory design	
	Iversen, O. S. and T. W. Leong (2012).	Values-led participatory design: mediating the emergence of values.	
	SEE ALSO: VALUES IN DECISION-MAKING		

VALUES IN CONSTRUCTION AND DESIGN MANAGEMENT		
Mills, G. R. W. and S. A. Austin (2014).	**Making sense of stakeholder values emergence.**	**KEY PAPER**
Mills, G. R. (2013).	**Values and value in design.**	**KEY PAPER; Thesis**
Thomson, D. S., et al. (2013).	"Practitioner understanding of value in the UK building sector."	**KEY PAPER**
Mills, G. R., et al. (2006).	**Values and value - two perspectives on understanding stakeholders**	**KEY PAPER**
Thomson, D. S., et al. (2003).	Managing value and quality in design.	
Devine-Wright, H., et al. (2003).	**Matching values and value in construction and design.**	**KEY PAPER**
Thomson, D. S., et al. (2003).	Addressing the subjective view of value delivery.	
VALUES IN SUSTAINABILITY		
Ratner, B. D. (2004). ""Sustainability" as a Dialogue of Values: Challenges to the Sociology of Development.		
DESIGN MANAGEMENT		
Emmitt, 2010	Design Management in AEC-Origins and Trends	
Emmitt and Ruikar	Collaborative Design Management	BOOK
Brown	Communication in the design process	BOOK
Gray and Huges	Building Design Management	BOOK

Reference		REMARKS: Conclusions - Results - Selected Findings - Implications - Limitations
HUMAN & CULTURAL VALUES		
Crompton, T. (2010).	Common cause: the case for working with our cultural values	**KEY REPORT**
Holmes, T., et al. (2011)	The Common Cause Handbook	**KEY REPORT**
Kasser, T. (2011).	Cultural Values and the Well-Being of Future Generations: A Cross-National Study	the more a nation prioritized Egalitarianism versus Hierarchy values and Harmony versus Mastery values…
Harrison, L. E. and S. P. Huntington (2000).	Culture matters: How values shape human progress	Book
OLDER REVIEWS + IMPORTANT PAPERS		
Schwartz, S. H. (2011).	"Studying Values: Personal Adventure, Future Directions." Journal of Cross-Cultural Psychology 42(2): 307-319.	
Cheng, A.-S. and K. R. Fleischmann (2010).	"Developing a meta-inventory of human values." Proceedings of the American Society for Information Science and Technology 47(1): 1-10.	**KEY PAPER**
Maio, G. R. (2010).	Mental Representations of Social Values. Advances in Experimental Social Psychology. P. Z. Mark, Academic Press. Volume 42: 1-43.	
O'Brien, E. A. (2003).	"Human values and their importance to the development of forestry policy in Britain: a literature review." Forestry 76(1): 3-17.	
Graves, C. W. (1970).	"Levels of existence: an **open system theory of values.**" Journal of humanistic psychology.	"…a different three part premise, which casts quite a different light upon our value problems. It is the humanistic, organismic, systems, or as I call it, the '*Level of Existence*' point of view. This premise holds: I. That man's nature is not a set thing, that it is ever emergent, that it is an open system, not a closed system. II. That man's nature evolves by saccadic, quantum-like jumps from one steady state system to another. III. That man's values change from system to system as his total psychology emerges in new form with each quantum-like jump to a new steady state of being." p132-133
Maio, G. R. (2011).	Don't Mind the Gap Between Values and Action	
VALUES IN MANAGEMENT, BUSINESS AND ORGANISATIONS		
Bernthal, W. F. (1962).	Value Perspectives in Management Decisions	
Scott, W. A. (1965)	Values and organizations: A study of fraternities and sororities	
Peloza, J. and R. Yachnin (2008).	Valuing business sustainability: A systematic review	**KEY REPORT**
Anderson, C. (1997).	"Values-based management."	
Jarvensivu (2007)	Values-driven management in strategic networks	
Pruzan, P. (1998).	From Control to Values-Based Management and Accountability.	
VALUES CONGRUENCE		
PP4SD (2010).	Linking personal and organisational values	
Meglino and Ravlin, (1998).	Individual Values in Organizations: Concepts, Controversies, and Research	**KEY PAPER**
McDonald, P. R. (1993).	Individual-organizational Value Congruence: Operationalization And Consequents.	**KEY PAPER**
Gollan, T. and E. H. Witte (2014).	From the Interindividual to the Intraindividual Level	**KEY PAPER: MOTIVATIONAL CONFLICTS AND COMPATIBILITIES**
Meglino, B. M., et al. (1989).	A Work Values Approach to Corporate Culture: A Field Test of the Value Congruence Process and Its Relationship to Individual Outcomes	INTERESTING
Bansal, P. (2003). "From Issues to Actions: The Importance of Individual Concerns and Organizational Values in Responding to Natural Environmental Issues."		
Finegan, J. E. (2000). "The impact of person and organizational values on organizational commitment."		
Lucy, C. and G. Dianne (2008). "Generational differences in work values, outcomes and person-organisation values fit."		GENERATIONAL DIFFERENCES
Values ALIGNMENT	(from Mills, 2013)	
Posner and Schmidt (1993)		
Liedtka (1989)		
Schwartz's (1992, 2005) dynamic values trade-off structure		
Sawhney (2002)		
Peat (2003)		
Dolan and Garcia (2002)		
Jaffe (1998)		
Lencioni (2002)		

COLLECTIVE, GROUP VALUES		
Zhang, X., et al. (2008). "Toward collective organizational values: a case study in UK construction."		
Jaakson, K. (2010). "Engagement of Organizational Stakeholders in the Process of Formulating Values Statements		
Jaakson, K. (2010). "Management by values: are some values better than others?"		
Jaakson, K., et al. (2008). "Organizational Values and Organizational Practice: What Makes Them Diverge?"		
Talwar, B. (2009). "Comparative study of core values of excellence models vis-à-vis human values."		
Values and sustainability (title search)		
Marcus, J. (2012)	Human Values and Corporate Actions Propensity: Examining the Behavioural Roots of Societal Sustainability	
Podger, D., et al. (2010)	The Earth Charter and the ESDinds Initiative: Developing Indicators and Assessment Tools for Civil Society Organisations to Examine the Values Dimensions of Sustainability Projects	
Murray, P. E., et al. (2007)	Deconstructing sustainability literacy—the role of values	
Leiserowitz, A. A., et al. (2006).	"Sustainability Values, Attitudes, and Behaviors: A Review of Multinational and Global Trends." Annual Review of Environment and Resources 31(1): 413-444.	**KEY PAPER**
Ratner, B. D. (2004)	"Sustainability" as a Dialogue of Values: Challenges to the Sociology of Development	
O'Brien, K. L. (2009).	Do values subjectively define the limits to climate change adaptation?	Chapter in Adger et al. 2009
SEE ALSO: VALUES IN DECISION-MAKING		
VALUES AND DESIGN		
RIBA, 2013	Green guide to the architects job book	"When used with the appropriate procurement method it should assist in providing a framework for: • Establishing, developing and communicating client priorities and value systems; • Setting the sustainable development strategy, and meeting appropriate targets; • Maintaining the strategy throughout the project; • Engaging with stakeholders; • Selecting the design and delivery team; • Identifying the need for specialist advice; • Setting appropriate fee structures; • Developing teamwork and robust communication;"
Iversen, O. S., et al. (2012).	Values-led participatory design	
Iversen, O. S. and T. W. Leong (2012).	Values-led participatory design: mediating the emergence of values.	
Iversen, O. S., et al. (2010).	Rekindling values in participatory design.	
Boztepe (2003)	The Notion of Value and Design	**KEY PAPER**
VALUES IN CONSTRUCTION AND DESIGN MANAGEMENT		
Thomson, D. S., et al. (2003). "Managing value and quality in design."		**KEY PAPER**
DEVINE-WRIGHT, H., et al. (2003). Matching values and value in construction and design.		**KEY PAPER**
Thomson, D. S., et al. (2003). Addressing the subjective view of value delivery.		**KEY PAPER**
Mills, G. R., et al. (2006). Values and value-two perspectives on understanding stakeholders,		**KEY PAPER**
Thomson, D. S., et al. (2013). "Practitioner understanding of value in the UK building sector."		**KEY PAPER**
Mills, G. R. (2013). Values and value in design.		**KEY PAPER; Thesis**
Mills, G., et al. (2008). "VALUES DRIVEN POLICY IN DESIGNING ENVIRONMENTS FOR CHILDREN		RELEVANT PAPER

See also
{Bourne, 2013 #1554;Pfeffer, 1999 #1553;Devine-Wright, 2003 #1552;Mills, 2014 #1550;Anderson, 1997 #1549;Thomas, 2013 #1548;Lucy, 2008 #1547;Pruzan, 1998 #1544;Lyons, 2010 #1543;Finegan, 2000 #1542;Talwar, 2009 #1541;Jaakson, 2010 #1540;Jaakson, 2008 #1538;Jaakson, 2010 #1536;Zhang, 2008 #1535;Mills, 2008 #1534;Mills, 2013 #1533;Rangel, 2008 #1530;Hall, 2007 #1528;Hall, 2003 #1527;Mills, 2006 #1526;Thomson, 2013 #1525;Thomson, 2003 #1524;Devine-Wright, 2003 #1523;Mills, 2009 #1522;Thomson, 2003 #1521;PP4SD, 2010 #1520;Schwartz, 1997 #1518;Oderberg, 2004 #1517;Newman, 2009 #1516;DEFRA, 2008 #1515;Inglehart, 2000 #1514;Inglehart, 2000 #1513;Inglehart, 2000 #1512;Kasser, 2011 #1511;O'Brien, 2009 #1510;Adger, 2009 #1509;Porter, 2000 #1508;PELOZA, 2008 #1507;Braithwaite, 1985 #1502;Grube, 1994 #1501;Eyal, 2009 #1500}

Reference		TOPIC AREA	TYPE
VALUES 2012-2014+			
Burford, G., et al. (2014).	"From abstract values to concrete indicators: values-based performance assessment as a catalyst for organisational change." Journal of Business Ethics UNDER REVIEW.	Values indicators	
Cohen, G. L. and D. K. Sherman (2014).	"The Psychology of Change: Self-Affirmation and Social Psychological Intervention." Annual Review of Psychology 65(1): 333-371.	Change psychology	**REVIEW PAPER**
Corner, A., et al. (2014).	"Public engagement with climate change: the role of human values." Wiley Interdisciplinary Reviews: Climate Change 5(3): 411-422.	Values REVIEW, Framing messages	**REVIEW/ OVERVIEW**
Dobewall, H., et al. (2014).	"A comparison of self-other agreement in personal values versus the Big Five personality traits." Journal of Research in Personality 50: 1-10.	Values, Traits; Schwartzian	
Gouveia, V. V., et al. (2014).	"Functional theory of human values: Testing its content and structure hypotheses." Personality and Individual Differences 60(0): 41-47.	Function of Values	**THEORETICAL ADVANCE**
Harder, M. K., et al. (2014).	"Reconceptualizing 'effectiveness' in environmental projects: Can we measure values-related achievements?" Journal of Environmental Management 139(0): 120-134.	Values measurement	
Jonsson, A.-K. E. And A. Nilsson (2014).	Exploring the Relationship between Values and Pro-environmental Behavior: The influence of Locus of Control." Environmental Values.	Values, Pro-environmental Behavior	
Parks-Leduc, L., et al. (2014).	"Personality Traits and Personal Values: A Meta-Analysis." Personality and Social Psychology Review.	Values, Traits	**META-ANALYSIS**
Schwartz, S. H. (2014).	"Rethinking the Concept and Measurement of Societal Culture in Light of Empirical Findings." Journal of Cross-Cultural Psychology 45(1): 5-13.	Values, Societal Culture - Concept, Measurement	
Shilton, K., et al. (2014).	How to see values in social computing: methods for studying values dimensions. Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing. Baltimore, Maryland, USA, ACM: 426-435.	Methods for studying values dimensions	**METHODS**
Steg, L., et al. (2014).	"An Integrated Framework for Encouraging Pro-environmental Behaviour: The role of values, situational factors and goals." Journal of Environmental Psychology 38(0): 104-115.		**INTEGRATED FRAMEWORK**
Thornhill, R. and C. L. Fincher (2014).	The Parasite-Stress Theory of Values. The Parasite-Stress Theory of Values and Sociality, Springer International Publishing: 59-82.	Values theory from an epidemiological and evolutionary biological perspective	**THEORETICAL ADVANCE**
Vecchione, M., et al. (2014).	"Personal values and political activism: A cross-national study." British Journal of Psychology.	Values, Political Activism	

2013			
Arpan, L. M., et al. (2013).	"Motivating the Skeptical and Unconcerned: Considering Values, Worldviews, and Norms When Planning Messages Encouraging Energy Conservation and Efficiency Behaviors." Applied Environmental Education and Communication: an International Journal 12(3): 207-219.	Motivating communications - Values, Worldviews, Norms	
Bardi, A. and S. H. Schwartz (2013).	How does the value structure underlie value conflict? Values in Youth Sport and Physical Education: 137.	Values Structure, Value conflict	
Bardi, A., et al. (2013).	Values and identity process theory: Theoretical integration and empirical interactions. Identity Process Theory: Identity, Social Action and Social Change. G. M. B. Rusi Jaspal, Cambridge University Press.	Values, Identity	
Best, H. and J. Mayerl (2013).	"Values, Beliefs, Attitudes: An Empirical Study on the Structure of Environmental Concern and Recycling Participation." Social Science Quarterly 94(3): 691-714.		
Blackmore, E., et al. (2013).	Common Cause for Nature, A practical guide to values and frames in conservation. Common Cause. Machynlleth, Wales, Public Interest Research Centre.	Values, Frames, Conservation	**GUIDELINES**
Burford, G., et al. (2013). .	"Field trials of a novel toolkit for evaluating 'intangible' values-related dimensions of projects." Evaluation and Program Planning 36(1): 1-14	Values evaluation	
Burford, G., et al. (2013).	"Bringing the "Missing Pillar" into Sustainable Development Goals: Towards Intersubjective Values-Based Indicators." Sustainability 5(7): 3035-3059.	Values indicators	
Cieciuch, J., et al. (2013).	"Applying the Refined Values Theory to Past Data: What Can Researchers Gain?" Journal of Cross-Cultural Psychology.	Refined Values Theory	
Kasser, T., et al. (2013).	The art of life: understanding how participation in arts and culture can affect our values.	Values: arts and participation	**REPORT (GREY)**
Podger, D., et al. (2013).	"Can values be measured? Significant contributions from a small civil society organization through action research." Action Research 11(1): 8-30.	Values measurement	
Shilton, K. (2013).	"Values Levers: Building Ethics into Design." Science, Technology & Human Values 38(3): 374-397.	Values levers, Ethics, Design	
2012			
Boyko, C. T., et al. (2012).	"Benchmarking sustainability in cities: The role of indicators and future scenarios." Global Environmental Change 22(1): 245-254.		
Chilton, P., et al. (2012).	Communicating bigger-than-self problems to extrinsically-oriented audiences. WWF-UK, Godalming, UK, Public Interest Research Centre.		**REPORT (GREY)**
Cieciuch, J. and S. H. Schwartz (2012).	"The number of distinct basic values and their structure assessed by PVQ-40." J Pers Assess 94(3): 321-328.	Values, stucture, assessment	
Gatersleben, B., et al. (2012).	"Values, identity and pro-environmental behaviour." Contemporary Social Science: 1-19.	Values, identity and pro-environmental behaviour	
Schwartz, S. H. (2012).	"An overview of the Schwartz theory of basic values." Online Readings in Psychology and Culture 2(1): 11.		**OVERVIEW**
Schwartz, S. H., et al. (2012).	"Refining the theory of basic individual values." Journal of personality and social psychology 103(4): 663.	Refined Values Theory	**THEORETICAL ADVANCE**
Seppälä, T., et al. (2012).	"Change-oriented organizational citizenship behaviour: An interactive product of openness to change values, work unit identification, and sense of power." Journal of Occupational & Organizational Psychology 85(1): 136-155.		
Steen, M. and I. van de Poel (2012).	"Making Values Explicit During the Design Process." Technology and Society Magazine, IEEE 31(4): 63-72.	Values, Design	

Values Conversations

Field or Discipline	Authors (Year)	Year	Title	Key Concepts	Key Quotation
Design	Shilton, K.	2013	Values Levers: Building Ethics into Design		
Design	Steen and van de Poel	2012	Making Values Explicit During the Design Process	value sensitive design; making values explicit.	"...we focus on designers' intended values, on users' aspired values, and on the differences between these values. The authors advocate making these values more explicit and making the discussion of these values more transparent. Building on findings and methods from the field of value sensitive design, we recommend improving the match between designers' and users' values.
Design	Iversen, Leong, Wright, Gregory, Bowker	2012	Working with human values in design		...there is still considerable divergence and a lack of agreement in how we conceptualize and approach values during technology design.
Design for Social Computing	Shilton, Koepfler and Fleischmann	2014	How to see values in social computing: methods for studying values dimensions		
Design for Social Computing	Cheng and Fleischmann	2010	Developing a meta-inventory of human values		
Design / Participatory Design	Kasser, T., et al.	2013	The Art of Life: Understanding How Participation in Arts and Culture Can Affect Our Values		
Design / Participatory Design	Iversen and Leong	2012	Values-led participatory design: mediating the emergence of values	recursive 3-phase process; support the emergence of values; explicit and implicit mediation.	... working with values is a **recursive 3-phase process that supports the emergence, development and grounding of values**. ... focuses solely upon this emergence phase, illustrating how we can **support the emergence** of values during the initial phase of a values-led inquiry ...[we] describe how we establish, negotiate and the debrief values during this initial phase of a values-led inquiry. By foregrounding both explicit and implicit mediation in the PD process, we show how a theoretical understanding of mediation can potentially enrich and further the values-led PD tradition.
Education for Sustainability	Hoover, Harder, Burford				
Environmental Behaviour/Psychology	Best, H. and J. Mayerl	2013	Values, Beliefs, Attitudes: An Empirical Study on the Structure of Environmental Concern and Recycling Participation		
Environmental Behaviour/Psychology	Steg, Bolderdijk, Keizer, Perlaviciute	2014	An Integrated Framework for Encouraging Pro-environmental Behaviour: The role of values, situational factors and goals		
Environmental Behaviour/Psychology	Jonsson, A.-K. E. and A. Nilsson	2014	Exploring the Relationship between Values and Pro-environmental Behavior: The influence of Locus of Control.		
Environmental Behaviour/Psychology	Corner, Markowitz, Pidgeon	2014	Public engagement with climate change: the role of human values		
Environmental Behaviour/Psychology	Best and Mayerl	2013	Values, Beliefs, Attitudes: An Empirical Study on the Structure of Environmental Concern and Recycling Participation		
Environmental Behaviour/Psychology	Evans, Maio, Corner, Hodgetts, Ahmed, Hahn	2013	Self-interest and pro-environmental behaviour	Spillover	congruent with value theory, positive spillover from one environmental message to another behaviour (car-sharing to recycling) may occur primarily when self-transcending reasons alone are made salient.
Environmental Behaviour/Psychology	Newman, Milo	2013	Why the World Won't Listen: Problems with a 'Values Approach' to Climate Change		
Environmental Behaviour/Psychology	Gatersleben, Murtagh, Abrahamse	2012	Values, identity and pro-environmental behaviour	VIB - Values, Identity and Behaviour	Attitudes and attitude change are often examined to help reach this goal. But although attitudes are relatively good predictors of behaviour and are relatively easy to change they only help explain specific behaviours. **More stable individual factors such as values and identities may affect a wider range of behaviours.** In particular *factors which are important to the self are likely to influence behaviour across contexts and situations* . **Values and identities were good predictors of pro-environmental behaviour in each study and identities explain pro-environmental behaviours over and above specific attitudes.** The link between values and behaviours was fully mediated by identities in two studies and partially mediated in one study supporting the idea that identities may be broader concepts which incorporate values. ... it suggests fruitful future research directions which should explore the development and maintenance of identities.
Environmental Communication	Blackmore, Underhill, McQuilkin, Leach, Holmes	2013	Common Cause for Nature, A practical guide to values and frames in conservation		
Environmental Communication	Arpan, Opel, and Lu	2013	Motivating the Skeptical and Unconcerned: Considering Values, Worldviews, and Norms When Planning Messages Encouraging Energy Conservation and Efficiency Behaviors		ALSO ENVIRONMENTAL BEHAVIOUR
Organizational Psychology, Management, Project Management	Harder, Velasco, Burford, Podger, Janoušková, Piggot, Hoover	2014	Reconceptualizing 'effectiveness' in environmental projects: Can we measure values-related achievements	risk perceptions; personal responsibility; guilt-driven motivations.	The current study examined the association of personal values or worldviews with individual motivations for reduced energy use and energy-use-related risk perceptions. We also investigated how perceptions of others' energy use influenced motivation to reduce use among those with high, versus low, risk perceptions. The perception that others were reducing use was associated with both increased feelings of personal responsibility and guilt-driven motivations to conserve energy among those who perceived greater energy-use-related-risk but was not associated with such motivations among those who perceived less risk.
Organizational Psychology, Management, Project Management	Burford, Stapleton, Podger, Velasco, Piggot, Zahradnik, Hoover, Dahl, Harder	2014	From abstract values to concrete indicators: values-based performance assessment as a catalyst for organisational change		
Organizational Psychology, Management, Project Management	Podger, Velasco, Luna, Burford, Harder	2013	Can values be measured? Significant contributions from a small civil society organization through action research		
Organizational Psychology, Management, Project Management	Burford, Velasco, Janoušková, Zahradnik, Hak, Podger, Piggot, Harder	2013	Field trials of a novel toolkit for evaluating 'intangible' values-related dimensions of projects		
Organizational Psychology, Management, Project Management	Seppälä, Lipponen, Bardi, Pirttilä-Backman	2012	Change-oriented organizational citizenship behaviour: An interactive product of openness to change values, work unit identification, and sense of power	Change-oriented OCB, personality and power	This study focused upon change-oriented organizational citizenship behaviour (OCB) as an expression of openness to change values, and also upon psychological factors that can moderate the value-behaviour relationship. We propose that **personal values, group identification, and a sense of power interact in predicting change-oriented OCB** of employees.
Politics, Political Activism	Vecchione, Schwartz, Caprara, Schoen, Cieciuch, Silvester, Bain, Bianchi, Kirmanoglu, Baslevent	2014	Personal values and political activism: A cross-national study.		

Social (&) Behavioural (& Psychology / Personality) Studies	Thornhill, R. and C. L. Fincher (2014)	2014	The Parasite-Stress Theory of Values		Using hypotheses inspired by evolutionary theory, the authors tie social development and human values to the evolution of prevailing social groups as a response to parasite avoidance and the two types of stress that arise from coping with parasite-related illness. [RPK own summary.]
Social (&) Behavioural (& Psychology / Personality) Studies	Parks-Leduc, Feldman and Bardi	2014	Personality Traits and Personal Values: A Meta-Analysis		
Social (&) Behavioural (& Psychology / Personality) Studies	Gouveia, Milfont, Guerra	2014	Functional theory of human values: Testing its content and structure hypotheses		
Social (&) Behavioural (& Psychology / Personality) Studies	Dobewall, Aavik, Konstabel, Schwartz, Realo	2014	A comparison of self-other agreement in personal values versus the Big Five personality traits		
Social (&) Behavioural (& Psychology / Personality) Studies	Cohen, G. L. and D. K. Sherman	2014	The Psychology of Change: Self-Affirmation and Social Psychological Intervention [through Core Personal Values]		
Social (&) Behavioural (& Psychology / Personality) Studies	Bardi and Schwartz	2013	How does the value structure underlie value conflict? [A conceptual framework for value-change interventions in sport]		VT & IPT "have some overlapping propositions particularly with regards to human motivation."
Social (&) Behavioural (& Psychology / Personality) Studies	Schwartz, Cieciuch, Vecchione, Davidov, Fischer, Beierlein, Ramos, Verkasalo, Lönnqvist, Demirutku	2012	Refining the theory of basic individual values	Refined Values Theory	...intended to provide greater heuristic and explanatory power than the original theory of 10 values. The refined theory more accurately expresses [that] **values form a circular motivational continuum.** The theory defines and orders 19 values on the continuum based on their compatible and conflicting motivations, expression of self-protection versus growth, and personal versus social focus. See also Cieciuch et al. (2013). "Applying the Refined Values Theory to Past Data: What Can Researchers Gain?" and Cieciuch, J. and S. H. Schwartz (2012). "The number of distinct basic values and their structure assessed by PVQ-40."
Social (&) Behavioural (& Psychology / Personality) Studies	Chilton, Crompton, Kasser, Maio, Nolan	2012	Communicating bigger-than-self problems to extrinsically-oriented audiences		...systemic and durable responses to the challenges that our organisations confront cannot be envisaged unless these come to be built upon an appeal to intrinsic values. From Chilton, P., et al. (2012).
Social (&) Behavioural (& Psychology / Personality) Studies	Crompton, T. (2010).	2010	Common Cause: The Case for Working with our Cultural Values		
Social (&) Behavioural (& Psychology / Personality) Studies	Hitlin & Piliavin	2004	Values: Reviving a Dormant Concept		**WHAT ARE VALUES?** Hechter (1993) claims that the study of values contains four impediments: (a) Values are unobservable, (b) current theories give little guidance for understanding how values shape behavior, (c) behavioral explanations are unconvincing when the process that generates values is unknown , and (d) there are difficult problems with measuring values. Although recent empirical and theoretical work deals satisfactorily with some of these concerns, this list of impediments provides a useful starting point. We add two items: (e) Values are often confiated with other social psychological phenomena and (/) values have historical and cultural variability in their content. Sociologists must not reify historically variable phenomena as timeless human characteristics (B. Schwartz 1993). **What Values Are Not** There are at least four concepts with which values are confiated: attitudes, traits, norms, and needs. Values are more abstract than attitudes (Rokeach 1973, Williams
Social (&) Behavioural (& Psychology / Personality) Studies	Datler, Jagodzinski, Schmidt	2014	Two theories on the test bench: Internal and external validity of the theories of Ronald Inglehart and Shalom Schwartz		
Social (Environmental) Movements	Stern, P. C., et al.	1999	A value-belief-norm theory of support for social movements: The case of environmentalism	VBN	
Socio-Cultural Studies	Schwartz, S. H.	2014	Rethinking the Concept and Measurement of Societal Culture in Light of Empirical Findings		
Sustainable Consumption	Gatersleben				
Sustainable Consumption	Jackson				
Sustainable Consumption	Uzell				
Sustainable Development	Burford, Hoover, Velasco, Janoušková, Jimenez, Piggot, Podger, Harder	2013	Bringing the "Missing Pillar" into Sustainable Development Goals: Towards Intersubjective Values-Based Indicators		

Values Conversations

Values Relevant+older

Field or Discipline	Authors (Year)	Year	Title	Key Concepts	Key Quotation
Psychology…	Lyons, et al.	2007	An empirical assessment of generational differences in basic human values	generational social values differences	"The findings suggest that generation is a useful variable in examining differences in social values." "… valuing is ideally a function of the self, which is that integrative center that is attempting to actualize itself, be intrinsically motivated, and satisfy its needs for autonomy, competence, and relatedness (P.137)."
HCI	Friedman, B. and P. H. Kahn Jr	2002	Human values, ethics, and design		How Values Become Implicated in Technological Design, Distinguishing Usability From Human Values With Ethical Import, Approaches to Human Values and Ethics in Design, Professional Ethics…
Sustainable Development	Azapagic, A. and S. Perdan	2005	An integrated sustainability decision-support framework Part I An integrated sustainability decision-support framework Part II		
Design management	Ruud Binnekamp, et al.	2006	Open design; a stakeholder-oriented approach in architecture, urban planning, and project management.	linear decision-making	Open Design bypasses classical theory of decision making and uses a linear programming model to capture the elements of group decision making in an attempt to develop a theory of architectural design.
Social psychology; green building	Hoffman, A and Henn, Rebecca	2008	Overcoming the Social and Psychological Barriers to Green Building	Behavioral Barriers to Green Building; Individual-Organizational - Institutional Level Perspectives	
Behavioural/ Environmental Psychology, Social Issues	Stern and Dietz	1994	The Value Basis of Environmental Concern		
Behavioural/ Environmental Psychology, Social Issues	Stern, Dietz and Guagnano	1998	Social Structural and Social Psychological Bases of Environmental Concern		
Behavioural/ Environmental Psychology, Social Issues	Van Liere, K. D. and Dunlap, R. E. (1980).	1980	The Social Bases of Environmental Concern: A Review of Hypotheses, Explanations and Empirical Evidence		
Behavioural/ Environmental Psychology, Social Issues	Stern, P. C.	2000	Toward a Coherent Theory of Environmentally Significant Behavior		
Behavioural/ Environmental Psychology, Social Issues	Stern, Dietz, Abel, Guagnano and Kalof	1999	A value-belief-norm theory of support for social movements: The case of environmentalism		
Critical Social Eco-Psychology	Adams, M.	2014	Approaching Nature, 'Sustainability' and Ecological Crises from a Critical Social Psychological Perspective		
	Arpan, Opel and Lu	2013	Motivating the Skeptical and Unconcerned: Considering Values, Worldviews, and Norms When Planning Messages Encouraging Energy Conservation and Efficiency Behaviors		
	Phipps, M., et al.	2013	Understanding the inherent complexity of sustainable consumption: A social cognitive framework	VBN, MAO, Social cognitive theory, reciprocal determinism	
	Gatersleben, L Steg, C Vlek	2002	Measurement and Determinants of Environmentally Significant Consumer Behavior		
Built Environment	Schweber, Leiringer	2012	Beyond the technical: a snapshot of energy and buildings research		
	Huddart Kennedy, E., et al.	2013	Are we counting what counts? A closer look at environmental concern, pro-environmental behaviour, and carbon footprint.		
	Spinks, M.	2013	Understanding and actioning BRE environmental assessment method: a socio-technical approach		
Built Environment	Schweber, L.	2013	The effect of BREEAM on clients and construction professionals		
Built Environment	Green, S. D. and L. Schweber	2008	Forum: Theorizing in the context of professional practice: the case for middle-range theories.		
Built Environment	Henn, Rebecca	2013	Moving Targets: Managing Interinstitutional Relationships in Green Building Design and Construction		
Built Environment	Monahan, J., et al.	2014	Overcoming the barriers of green innovation in construction projects through its successful management		

Reference		REMARKS: Conclusions - Results - Selected Findings - Implications - Limitations	TYPE
FRAMES			
Framing and design			
Robinson, A., et al. (2013).	'Reinventing the wheel?': Case study of research into linear/non-linear and framing processes.	related/relevant	
Paton, B. and K. Dorst (2011)	Briefing and reframing: A situated practice [IN DESIGN]	**KEY PAPER**	
Framing sustainability			
Marshall, J. D. and M. W. Toffel (2004).	Framing the Elusive Concept of Sustainability: A Sustainability Hierarchy. Environmental Science & Technology 39(3): 673-682.	**KEY PAPER**	**HIERARCHY**
Liu, J., et al. (2013).	"Framing Sustainability in a Telecoupled World." Ecology and Society 18(2).	related/relevant	
Stenberg, A.-C. (2006).	The Social Construction of Green Building: Diachronic and Synchronic Perspectives. Building Economics and Management, Department of Civil and Environmental Engineering. Göteborg, Sweden, Chalmers University of Technology. DOCTOR OF PHILOSOPHY: 209.	related; thesis	**THESIS**
COMMON CAUSE			
Blackmore, E., et al. (2013).	Common Cause for Nature, A practical guide to values and frames in conservation. Common Cause. Machynlleth, Wales, Public Interest Research Centre.		**GUIDELINES**
Crompton, T. (2010).	Common cause: the case for working with our cultural values	**KEY REPORT**	
Holmes, T., et al. (2011)	The Common Cause Handbook	**KEY REPORT**	
DECISION, CHOICE			
Chong, D. and J. N. Druckman (2007).	"Framing Theory." Annual Review of Political Science 10(1): 103-126.	**KEY PAPER**	**REVIEW**
Kühberger, A. (1998).	"The Influence of Framing on Risky Decisions: A Meta-analysis." Organizational Behavior and Human Decision Processes 75(1): 23-55.	interesting	**META-ANALYSIS**
Mandel, D. R. (2013).	Do Framing Effects Reveal Irrational Choice? Journal of experimental psychology.		
Kahneman, D. and A. Tversky (1984)	Choices, values, and frames	related/relevant	
Tversky, A. and D. Kahneman (1986)	Rational choice and the framing of decisions	related/relevant	
Jones, C. R., et al. (2012).	"Assessing the impact of framing on the comparative favourability of nuclear power as an electricity generating option in the UK." Energy Policy 41(0): 451-465.		
Spence, A. and N. Pidgeon (2010).	"Framing and communicating climate change: The effects of distance and outcome frame manipulations." Global Environmental Change 20(4): 656-667.	possible	
McElroy, T. and J. J. Seta (2003).	"Framing effects: An analytic–holistic perspective." Journal of Experimental Social Psychology 39(6): 610-617.		**PERSPECTIVE**
Druckman, J. N. (2001).	"Evaluating framing effects." Journal of Economic Psychology 22(1): 91-101.		**EVALUATION**
Levin, I. P., et al. (1998).	All Frames Are Not Created Equal: A Typology and Critical Analysis of Framing Effects. Organizational Behavior and Human Decision Processes 76(2): 149-188.	possible	**REVIEW-TYPOLOGY**

Reference		REMARKS: Conclusions - Results - Selected Findings - Implications - Limitations
DECISION-MAKING & SUSTAINABILITY		
Arvai, J., et al. (2012)	Decision-making for Sustainability: A Systematic Review of the Body of Knowledge	
Bertels, S., et al. (2010)	Embedding sustainability in organizational culture: A systematic review of the body of knowledge	
Romli, Prickett, Setchi and Soe (2015)	Integrated eco-design decision-making for sustainable product development	not available yet
Maser, C. (2012)	Decision-Making for a Sustainable Environment: A Systemic Approach	
Kibert, C. J., et al. (2011)	Working Toward Sustainability: Ethical Decision-Making in a Technological World	LIBRARY BOOK
Cabot, et al. (2009)	Integrating Sustainability in Decision-Making Processes: A Modelling Strategy	
Azapagic and Perdan (2005)	An integrated sustainability decision-support framework. Part 1: Problem structuring	MCDA for sustainable option choice
Values in decision-making		
Verplanken, B. and R. W. Holland (2002)	Motivated decision making: effects of activation and self-centrality of values on choices and behavior	
Ravlin, E. C. and B. M. Meglino (1987)	Effect of Values on Perception and Decision Making: A Study of Alternative Work Values Measures	
Barrett, 2010	Values based decision making	
Barrett, 2014	Values-based leadership	
Anderson, 1997	Values based management	
Bernthal, W. F. (1962)	Value Perspectives in Management Decisions	
Barrett, 2006	Building a values-driven organization	
Bennett and Gibson, 2010	Values in Action	**POSSIBLY KEY PAPER**
Fisher, C., et al. (2013)	Business ethics and values	
Design Decision-making		
Mackinder, M. and H. Marvin (1982)	Design decision making in architectural practice	LIBRARY BOOK
Romli, A., et al. (2014)	Integrated eco-design decision-making for sustainable product development	
Bratteteig, T. and I. Wagner (2012).	Disentangling power and decision-making in participatory design	
d'Anjou, P. (2011).	An alternative model for ethical decision-making in design: A Sartrean approach	
Almendra, A. R. and H. Christiaans (2009).	Decision-making in Design: a comparative study.	
Almendra, R. A. and H. Christiaans (2009)	Decision making in the conceptual design phases: a comparative study	
Rehman, F. and X.-T. Yan (2008).	A Case Study to Support Conceptual Design Decision Making Using Context Knowledge.	
Hansen, C. T. and M. M. Andreasen (2004).	A mapping of design decision-making.	
Girod, M., et al. (2003)	Decision making in conceptual engineering design: An empirical investigation	
Macmillan, S., et al. (2002)	Mapping the design process during the conceptual phase of building projects	
Macmillan, S., et al. (1999)	Mapping the early stages of the design process-a comparison between engineering and construction	
Problem definition and framing		
Lyth, A., et al. (2015)	Place influences in framing and understanding climate change adaptation challenges	problem definition and framing
Shove, E. (2010)	Social Theory and Climate Change: Questions Often, Sometimes and Not Yet Asked	problem definition

Multiple criteria decision analysis MCDA and structured decision-making		
Mardani, et al. 2015	Fuzzy multiple criteria decision-making techniques and applications – Two decades review from 1994 to 2014	
Nordström, et al. (2010)	Integrating multiple criteria decision analysis in participatory forest planning : experience from a case study in northern Sweden.	The paper outlines a model for a participatory MCDA process with five steps: stakeholder analysis, structuring of the decision problem, generation of alternatives, elicitation of preferences, and ranking of alternatives.
Stirling and 2015	Multi-criteria mapping: A manual	
DCLG	Multi-criteria analysis: a manual	
Yevseyeva	Multi-Criteria Decision Analysis/Aiding: Principles, Algorithms, and Case Studies	Presentation
Linkov and Steevens	Multi-Criteria Decision Analysis-Ch35_AppA	
Cave	Multi-Criteria Decision-Making: Using the Analytic Hierarchy Process for Wicked Risk Problems	Presentation
Zeleny, 1998	Multiple criteria decision making: eight concepts of optimality	
Franco, Montibeller, 2009	Problem Structuring for Multi-Criteria Decision Analysis Interventions	
Hammond, Keeney and Raiffa (1998)	Smart Choices: A Practical Guide to Making Better Decisions	PrOACT Decision Making Model
BCHydro	Structured Decision-making in a page	
Ureña, et al. 2015	Managing incomplete preference relations in decision making-A Review	INTERESTING
Gilboa,	Making Better Decisions: Decision Theory in practice_sample	BOOK
Industry Canada	STRUCTURED DECISION-MAKING	
Organizational behavior, Business, and Management Decision-making		
Kreitner, R. and A. Kinicki (2008).	Organizational Behavior	**KEY REFERENCE; BOOK;** Values, Value systems; decision-making,
Adger, W. N., et al. (2003)	Governance for sustainability: towards a 'thick' analysis of environmental decisionmaking	
Garvin, D. , & Roberto, M. (2001).	What you don't know about making decisions. Harvard Business Review, 79(8), 108-116.	
Klein, G. (2008)	Naturalistic Decision Making	
Lipshitz, R. and O. Strauss (1997)	Coping with Uncertainty: A Naturalistic Decision-Making Analysis	"...decision makers distinguished among three types of uncertainty: inadequate understanding, incomplete information, and undifferentiated alternatives. To these they applied five strategies of coping: reducing uncertainty, assumption-based reasoning, weighing pros and cons of competing alternatives, suppressing uncertainty, and forestalling. Inadequate understanding was primarily managed by reduction, incomplete information was primarily managed by assumption-based reasoning, and conflict among alternatives was primarily managed by weighing pros and cons."
Robbins, et. Al. (2015).	Fundamentals of Management: Essential Concepts and Applications	
Sustainability and business		
B.D. Parrish, 2010	Sustainability-driven entrepreneurship: Principles of organization design	

ORGANISATIONAL BEHAVIOUR AND INSTITUTIONAL PERSPECTIVES		REMARKS: Conclusions - Results - Selected Findings - Implications - Limitations
Organisational behaviour, management, ethics		
Kreitner;	Organizational behavior	BOOK
Evans GE;	Management basics for information professionals	BOOK
Ferrell, et.al., 2005	Business ethics: ethical decision making and cases	BOOK
Fisher, et.al., 2005	Business Ethics and Values	BOOK
Robbins	Fundamentals of management: essential concepts and applications	BOOK
Chapman, et.al. 2013	Working towards sustainability: Exploring the workplace as a site for proenvironmental behaviour change	CHAPTER in: Crocker & Lehmann, 2013; Motivating Change: Sustainable Design and Behaviour in the BE
Institutional perspectives		
Ostrom, E. (2009).	Understanding institutional diversity	Ostrom
Ostrom, E. (2008).	Doing Institutional Analysis: Digging Deeper than Markets and Hierarchies.	KEY TEXT; CHAPTER
Anderies, J. M., et al. (2004)	A Framework to Analyze the Robustness of Social-ecological Systems from an Institutional Perspective	Ostrom
Dietz, T., et al. (2003)	The struggle to govern the commons	Ostrom; Promising strategies for addressing these problems include dialogue among interested parties, officials, and scientists; complex, redundant, and layered institutions; a mix of institutional types; and designs that facilitate experimentation, learning, and change.
Kiser, L. L. and E. Ostrom (2000)	The three worlds of action: A metatheoretical synthesis of institutional approaches	Ostrom; chapter in Organizations and Communication Technology edited by Janet Fulk, Charles W. Steinfield; SEE SECTION ON: Levels of agreement about VALUES.
E. Ostrom (2000)	An Agenda for Institutional Anaiysis	Ostrom; chapter in Organizations and Communication Technology edited by Janet Fulk, Charles W. Steinfield; SEE SECTION ON: MULTIPLE LEVELS OF ANALYSIS
Ostrom, 2010	The Institutional Analysis and Development Framework and the Commons	KEY TEXT
Gauntlett, David (2002),	Anthony Giddens : The theory of structuration	"Giddens's theory of structuration notes that social life is more than random individual acts, but is not merely determined by social forces. To put it another way, it's not merely a mass of 'micro'-level activity - but on the other hand, you can't study it by only looking for 'macro'-level explanations. Instead, Giddens suggests, human agency and social structure are in a relationship with each other, and it is the repetition of the acts of individual agents which reproduces the structure. This means that there is a social structure - traditions, institutions, moral codes, and established ways of doing things; but it also means that these can be changed when people start to ignore them, replace them, or reproduce them differently." in: Media, Gender and Identity: An Introduction, Routledge, London and New York.

Reference	
Interdisciplinarity	
Lélé, S. and R. B. Norgaard (2005)	Practicing Interdisciplinarity
Huggins, T. J. and R. Peace (2014)	Visually Planning Sustainability Research: A Case Study of Interdisciplinary Collaboration
Rawes, P. (2013)	Relational Architectural Ecologies: Architecture, Nature and Subjectivity
Cole, R. J., et al. (2013)	Regenerative design, socio-ecological systems and co-evolution
Carmel-Gilfilen, C. and M. Portillo (2012)	Where what's in common mediates disciplinary diversity in design students: A shared pathway of intellectual development
Godemann, J. and G. Michelsen (2011)	Sustainability communication: Interdisciplinary perspectives and theoretical foundation
Design, Architecture, BE	
Cole, R. (2005)	Building green: moving beyond regulations and voluntary initiatives
Design Management and Communication	
Emmett and …	Design Management for Architects
Emmett	Design Management
Brown, 2011	Communication in Design Management
Mulgan et al 2006	Mapping value in the Built Environment
Nicholson 1992	Architectural Management
Nelson 2006	Managing Quality in Architecture
Halliday 2007	Green Guide to the Architects Job Book
Complexity+Systems+Multi-Levels	
Wells, J. (2012).	Complexity and sustainability, Routledge.
Allen-Managing complex adaptive systems	
Allen-Pathways and tools to change	
Allen-Science for sustainability-Research Methods and Approaches-SystemsThinking	
Allen-Social learning - providing strategic guidance under conditions of complexity and uncertainty	
Camaren-Linking Complexity and Sustainability Theories Implications for Modeling Sustainability Transitions	
Gallopín-A systems approach to SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT	
Ison-2014-Designing and Developing a Reflexive Learning System for Managing Systemic Change	
Kim-Introduction to Systems Thinking	
Learmonth_A practical approach to the complex problem of environmental sustainability	
Oxfam,Trebeck,beyond-resilience-to-a-new-system	
Preston-2014-Factor, Actor, Sector (FAS) Framework-Presentation	
Rayner_WICKED_PROBLEMS-CLUMSY_SOLUTIONS	
Schensul-Introduction to Multi-Level Community Based Culturally Situated Interventions	
Smith 2011-Recasting Paradigm Shift-True Sustainability and complex systems	
Sterling-Whole systems thinking as a basis for paradigm shift-education-sustainability	
Gaziulusoy-System innovation for sustainability-a scenario method and a workshop process for product development teams	
Trickett, 2009-Multilevel Community-Based Culturally Situated Interventions	
Wood,Gidado-2009-Complexity theory in BE	
Wood,Gidado-Project Complexity	
Innovation	
IntegralTheory+SpiralDynamics	
Sustainability Science	
Kates	
deVries	
Ratner, B. D. (2004).	"Sustainability" as a Dialogue of Values: Challenges to the Sociology of Development.
Organism + Environment -TriuneBrain	

APPENDIX 2.2.1 Key Sources Matrix, Very early example (at research plan approval stage)

Year	Author(s)	Title	Journal Book/Publication	REMARKS: Conclusions - Results - Selected Findings - Implications - Limitations	Rating
2013	du Plessis, Chrisna	Using the long lever of value change	Motivating Change, Crocker and Lehmann	Main reference for the formulation of arguments in favour of value-led decision-making and holstic problem-framing, albeit couched in terms of ecological worldviews and paradigm transitions. Key reference.	5
2012	Arvai, Joseph Campbell-Arvai, Victoria Steel, Piers	Decision-making for Sustainability: A Systematic Review of the Body of Knowledge	Network for Business Sustainability; Systematic Reviews	Provides indepth review, discussion and references for several models of sustainability decision-making for business under the headings: Normative Models of Decision-Making; Descriptive Models of Decision-Making; and Prescriptive Models of Decision-Making. Potentially invaluable reference.	5
2012	Skea, Jim	Research and evidence needs for decarbonisation in the built environment: a UK case study	Building Research & Information	Focusing on the energy domain, "the paper notes that the technical and social dimensions of radical decarbonisation are intimately intertwined. Social and economic research has a vital role to play in supporting the design and implementation of effective policy", pointing to "rigorous policy evaluation techniques", little used in the could play. It identifies a range of concerns relating to the political sphere, policy delivery and consumer acceptance... Good supporting reference.	3
2012	Schweber, Libby Leiringer, Roine	Beyond the technical: a snapshot of energy and buildings research	Building Research & Information	Highlights the importance of non-technical dimensions of sustiainability research, therefore aiming to engage a wider audience, promote academic status of construction research; all of which "depends on greater engagement with interpretivist types of analysis and theory-building, thereby challenging deeply ingrained views on the nature and role of academic research in construction." Good supporting reference.	3
2011	Cole, Raymond J.	Motivating stakeholders to deliver environmental change	Building Research & Information	framed around ways of motivating stakeholders directly and indirectly involved with the production and operation of buildings to engage collectively in delivering positive change in environmental performance. There is increasing recognition that technological solutions, economic/business arguments based on benefits and appropriate governance solutions are often insufficient to deliver this change. A missing catalyst is the social and organizational interplay amongst and between different stakeholders. In particular, there is a need to orchestrate the complex array of stakeholders and to understand each other's particular motivations and drivers.	
1999	Stern, et al	A value-belief-norm theory of support for social movements: The case of environmentalism	Human ecology review	They propose and evaluate a value-belief-norm (VBN) theory of social movement support; interesting for the weight given to values and the possibility to use them to garner support for sustainability as a social movement. Good reference.	4
2009	Schensul, Jean J	Community, Culture and Sustainability in Multilevel Dynamic Systems Intervention Science	American Journal of Community Psychology	Captures the Multilevel Dynamic Systems Intervention discussion and points to the notion that "change toward a goal will occur faster and more effectively when synchronized and supported across levels in a social system". Important reference.	5
2008	Darnton, Andrew	Reference report: An overview of behaviour change models and their uses	UK Government Social Research Behaviour Change Knowledge Review	makes the distinction between models of behaviour and theories of change. This is primarily an explanatory step, taken to highlight the different uses (and limits) of the types of models and theories incorporated in the behaviour change literature. Models of behaviour help us to understand specific behaviours, by identifying the underlying factors, which influence them. By contrast, theories of change show how behaviours change over time, and can be changed. While behavioural theory is diagnostic, designed to explain the determinant factors underlying behaviour, change theory is more pragmatic, developed in order to support interventions for changing current behaviours or encouraging the adoption of new behaviours. While the two bodies of theory have distinct purposes, they are highly complementary; understanding both is essential in order to develop effective interventions.	3
2008	Branson, Christopher M.	Achieving organisational change through values alignment	Journal of Educational Administration	Supports the view that the currently acknowledged widespread resistance to organisational change is caused by a failure of current organisational change strategies to attend to a values alignment process for all those people affected by the desired change. Moreover, this paper proposes that values alignment may not just be an important integral part of organisational change strategies; it could well be the bedrock, the foundation, on which all truly successful organisational change depends.	2
2003	Edén, Michael Birgersson, Lisbeth Dyrssen, Catharina Simes, Lena	Design for Sustainable Building-Development of a conceptual framework for improved design processes	SBE 03, CSIR conference	the rate of SD implementation is not comparable to the availability of cost-effective measures. There seems to be a discrepancy between findings in research and the context in which designers carry out their work. points out some obstacles to integrating sustainability into building design. 1) Concepts of sustainability are not transformed into design concepts. 2) Findings are not adapted to the different design phases. 3) Methods for communication have to be developed, both within the design team and between the participators and builders, and e	2

Arpan, L. M., et al. (2013). "Motivating the Skeptical and Unconcerned: Considering Values, Worldviews, and Norms When Planning Messages Encouraging Energy Conservation and Efficiency Behaviors." Applied Environmental Education and Communication: an International Journal **12**(3): 207-219.

The current study examined the association of personal values or worldviews with individual motivations for reduced energy use and energy-use-related risk perceptions. We also investigated how perceptions of others' energy use influenced motivation to reduce use among those with high, versus low, risk perceptions. The perception that others were reducing use was associated with both increased feelings of personal responsibility and guilt-driven motivations to conserve energy among those who perceived greater energy-use-related-risk but was not associated with such motivations among those who perceived less risk. Implications for planning information campaigns to encourage environmental behaviors such as reduced energy use within a diverse public are discussed.

Bardi, A., et al. (2013). Values and identity process theory: Theoretical integration and empirical interactions. Identity Process Theory: Identity, Social Action and Social Change. G. M. B. Rusi Jaspal, Cambridge University Press.

Identity and values are important driving forces in human lives. Identity Process Theory (IPT; Breakwell, 1986, 2001) and the Schwartz Value Theory (Schwartz, 1992) focus on distinct but related aspects of the self and have some overlapping propositions particularly with regards to human motivation. Hence, it is surprising that there has been no attempt so far to integrate them theoretically or empirically. This chapter provides the first attempt to address this gap in the literature. After presenting key elements of both theories, the chapter provides a theoretical integration that addresses the links between identity motives and outcomes and provides an empirical examination of the role of personal values as moderators of such links. Finally, we address identity and value change.

Bardi, A. and S. H. Schwartz (2013). How does the value structure underlie value conflict? Values in Youth Sport and Physical Education**:** 137.

Values are a key motivational basis for decision making and for behaviour (see Rokeach, 1973; Schwartz, 1992). This includes the sport context, where competitors often have to resolve a value-based conflict–to do whatever it takes in order to win or to play fairly and perhaps reduce the chances of winning. An established theory of value conflicts and compatibilities can explain the basis for such conflicts in sport. The aim of this chapter is to present this theory, locate values specific to the sport context within the structure of basic ...

Blackmore, E., et al. (2013). Common Cause for Nature, A practical guide to values and frames in conservation. Common Cause. Machynlleth, Wales, Public Interest Research Centre.

Psychologists, advertisers and politicians have long understood that we are not rational. The 'rational individual' does not exist; even the most scientific or logically minded are influenced by values and emotions. Marketers use this knowledge to sell products, appealing to whichever values do so most effectively: to our desire for status in selling cars; to our hedonism when selling holidays; and so on. When selling a particular product to a mass audience, this approach works well.

When the objective is broader—as it is when communicating about environmental issues—problems arise. When we appeal to a particular value, we do not simply affect a purchase decision: we also influence people's social and environmental behaviour as a whole. Appeals to self-interested goals—wealth, status and public image among them—can actually reduce our environmental concern.

The conservation sector has enjoyed many successes; but a vast range of indicators point to a natural world in decline, and public concern about the environment is at a 20-year low.1

Something must change drastically if we are to stop the loss of wildlife or limit the impacts of climate change. If we want people to care about the natural world and act to protect it, we must promote values that motivate them to do so—and think very carefully before encouraging self-interest.

Based on information gleaned from across the sector and psychological

research on human values, this guide aims to help conservation groups consider which kinds of values will help them achieve their goals.

Boyko, C. T., et al. (2012). "Benchmarking sustainability in cities: The role of indicators and future scenarios." Global Environmental Change **22**(1): 245-254.

Scenarios are a useful tool to help think about and visualise the future and, as such, are utilised by many policymakers and practitioners. Future scenarios have not been used to explore the urban context in much depth, yet have the potential to provide valuable insights into the robustness of decisions being made today in the name of sustainability. As part of a major research project entitled Urban Futures, a toolkit has been developed in the UK to facilitate the use of scenarios in any urban context and at any scale relevant to that context. The toolkit comprises two key components, namely, (i) a series of indicators comprising both generic and topic area-specific indicators (e.g., air quality, biodiversity, density, water) that measure sustainability performance and (ii) a list of characteristics (i.e., 1–2-sentence statements about a feature, issue or small set of issues) that describe four future scenarios. In combination, these two components enable us to measure the performance of any given sustainability indicator, and establish the relative sensitivity or vulnerability of that indicator to the different future scenarios. An important aspect of the methodology underpinning the toolkit is that it is flexible enough to incorporate new scenarios, characteristics and indicators, thereby allowing the long-term performance of our urban environments to be considered in the broadest possible sense.

Burford, G., et al. (2013). "Bringing the "Missing Pillar" into Sustainable Development Goals: Towards Intersubjective Values-Based Indicators." Sustainability **5**(7): 3035-3059.

Burford, G., et al. (2014). "From abstract values to concrete indicators: values-based performance assessment as a catalyst for organisational change." Journal of Business Ethics **UNDER REVIEW**.

The explicit communication of 'values' in intra-organisational discourse is widely assumed to generate positive outcomes within organisations. However, values-based management is poorly conceptualized and understood, and evidence for many of its alleged benefits is lacking. When value semantics are used in an abstract way without reference to specific actions (as in many corporate values statements), negative outcomes such as misunderstandings, employee disenchantment and allegations of leader hypocrisy may ensue.

In this paper, we demonstrate a novel, effective and efficient way of grounding abstract values language in concrete actions and perceptions, and illustrate that it can catalyse significant organisational transformation with observable positive outcomes.

The method uses VALUETOOL, a performance management toolkit consisting of 166 localisable 'soft' values-based indicators previously peer-elicited from similar organisations. When staff rate and discuss these indicators, they are quickly led to conceptualise, identify and articulate their shared values. Through a multi-case study across eight organisations, we examine the outcomes arising from the use of VALUETOOL, noting five distinct themes: (i) values conceptualisation; (ii) esteemrelated outcomes; (iii) assessment capacity-building; (iv) internal transformation / values mainstreaming; and (v) external communications. Our findings both corroborate and extend the existing literature on the benefits of values communication within organisations, as well as providing important insights into how negative consequences might be avoided. We note links to the literature on emergent strategy, whereby the use of values-based indicators can help organisations to clarify their intangible objectives.

Burford, G., et al. (2013). "Field trials of a novel toolkit for evaluating 'intangible' values-related dimensions of projects." Evaluation and Program Planning **36**(1): 1-14.

Chilton, P., et al. (2012). Communicating bigger-than-self problems to extrinsically-oriented audiences. WWF-UK, Godalming, UK, Public Interest Research Centre.

Cieciuch, J. and S. H. Schwartz (2012). "The number of distinct basic values and their structure assessed by PVQ-40." J Pers Assess **94**(3): 321-328.

According to the theory of basic human values (Schwartz, 1992), values form a circular motivational continuum. The original publication and most subsequent research partitioned this continuum into 10

values. In theory, however, it could be partitioned into a larger number of more narrowly defined values. We use multidimensional scaling (MDS) and confirmatory factor analysis (CFA) of data from the Portrait Values Questionnaire in Poland (N = 10,439) to assess a finer partitioning of values. MDS confirmed the circular motivational continuum of 10 values, with benevolence and universalism reversing positions. CFA discriminated 15 hypothesized values: 2 subtypes of universalism (protecting the environment and societal concern), 2 of achievement (ambition and showing success), 2 of self-direction (autonomy of action and autonomy of thought), 2 of security (national security and personal security), and 2 of tradition (tradition and humility), plus stimulation, hedonism, power, conformity, and benevolence. These 15 values were also distinguishable in the MDS projection.

Cieciuch, J., et al. (2013). "Applying the Refined Values Theory to Past Data: What Can Researchers Gain?" Journal of Cross-Cultural Psychology.

The refined theory of basic human values (Schwartz et al., 2012) divides the circular continuum of values into 19 motivationally distinct values. Research with a new questionnaire discriminated these values in 10 countries and demonstrated the benefits of the finer distinctions. We ask, whether researchers can gain by applying the refined theory to the large repository of available data gathered with the 40-Item Portrait Values Questionnaire (PVQ40)? How many, if any, of the more refined values can be distinguished in PVQ40 data, and does this provide improved understanding of the topics studied? We addressed these questions with data from 13 countries on four continents (total N = 7,352). Theory-based multidimensional scaling and confirmatory factor analyses in each country revealed several more narrowly defined values in the PVQ data. Examples from 14 countries demonstrated that these refinements can increase predictive and explanatory power.

Dobewall, H., et al. (2014). "A comparison of self-other agreement in personal values versus the Big Five personality traits." Journal of Research in Personality **50**: 1-10.

Can we judge other people's values accurately, or are values too subjective to assess? We compared self-other agreement in personal values with agreement in the Big Five personality traits. Self-other agreement in four higher-order values (median r = .47) and in six culture-specific value factors (median r = .50) was substantial and similar to that for the Big Five personality traits (median r = .51). When corrected for attenuation due to measurement error self-other agreement was high for all three scales (median rs > .65). The results suggest that people can assess values of others whom they know well with remarkable accuracy. Therefore, other-ratings of personal values can be used to validate and complement self-report value measures.

Gatersleben, B., et al. (2012). "Values, identity and pro-environmental behaviour." Contemporary Social Science: 1-19.

The importance of understanding and promoting pro-environmental behaviour among individual consumers in modern Western Societies is generally accepted. Attitudes and attitude change are often examined to help reach this goal. But although attitudes are relatively good predictors of behaviour and are relatively easy to change they only help explain specific behaviours. More stable individual factors such as values and identities may affect a wider range of behaviours. In particular factors which are important to the self are likely to influence behaviour across contexts and situations. This paper examines the role of values and identities in explaining individual pro-environmental behaviours. Secondary analyses were conducted on data from three studies on UK residents, with a total of 2694 participants. Values and identities were good predictors of pro-environmental behaviour in each study and identities explain pro-environmental behaviours over and above specific attitudes. The link between values and behaviours was fully mediated by identities in two studies and partially mediated in one study supporting the idea that identities may be broader concepts which incorporate values. The findings lend support for the concept of identity campaigning to promote sustainable behaviour. Moreover, it suggests fruitful future research directions which should explore the development and maintenance of identities.

Harder, M. K., et al. (2014). "Reconceptualizing 'effectiveness' in environmental projects: Can we measure values-related achievements?" Journal of Environmental Management **139**(0): 120-134.

There have been recent calls for a shift to an evidence-based paradigm in environmental management, grounded in systematic monitoring and evaluation, but achieving this will be complex and difficult. Evaluating the educational components of environmental initiatives presents particular challenges, because these programs often have multiple concurrent goals and may value 'human outcomes', such

as value change, which are intangible and difficult to quantify. This paper describes a fresh approach based on co-creating an entirely new values-based assessment framework with expert practitioners worldwide. We first discuss the development of a generic framework of 'Proto-Indicators' (reference criteria constituting prototypes for measurable indicators), and then demonstrate its application within a reforestation project in Mexico where indicators and assessment tools were localized to enhance context-relevance. Rigorously derived using unitary validity, with an emphasis on relevance, practicability and logical consistency from user perspectives, this framework represents a step-wise advance in the evaluation of non-formal EE/ESD programs. This article also highlights three important principles with broader implications for evaluation, valuation and assessment processes within environmental management: namely peer-elicitation, localizability, and an explicit focus on ethical values. We discuss these principles in relation to the development of sustainability indicators at local and global levels, especially in relation to post-2015 Sustainable Development Goals.

JONSSON, A.-K. E. and A. NILSSON (2014). "Exploring the Relationship between Values and Pro-environmental Behavior: The influence of Locus of Control." Environmental Values.

Kasser, T., et al. (2013). THE ART OF LIFE: UNDERSTANDING HOW PARTICIPATION IN ARTS AND CULTURE CAN AFFECT OUR VALUES.

Ojala, A. (2012). "What Makes Us Environmentally Friendly?: Social Psychological Studies on Environmenal Concern, Components of Morality and Emotional Connectedness to Nature." Publications of the Department of Social Research.

Parks-Leduc, L., et al. (2014). "Personality Traits and Personal Values: A Meta-Analysis." Personality and Social Psychology Review.

Personality traits and personal values are important psychological characteristics, serving as important predictors of many outcomes. Yet, they are frequently studied separately, leaving the field with a limited understanding of their relationships. We review existing perspectives regarding the nature of the relationships between traits and values and provide a conceptual underpinning for understanding the strength of these relationships. Using 60 studies, we present a meta-analysis of the relationships between the Five-Factor Model (FFM) of personality traits and the Schwartz values, and demonstrate consistent and theoretically meaningful relationships. However, these relationships were not generally large, demonstrating that traits and values are distinct constructs. We find support for our premise that more cognitively based traits are more strongly related to values and more emotionally based traits are less strongly related to values. Findings also suggest that controlling for personal scale-use tendencies in values is advisable.

Podger, D., et al. (2013). "Can values be measured? Significant contributions from a small civil society organization through action research." Action Research **11**(1): 8-30.

A collaborative partnership is developing a values-based indicator framework for use by civil society organizations (CSOs). A key sub-study on the relevance and usability of such indicators was carried out through an action research process with a CSO and it was found that: 1) it was, indeed, possible to develop useful and relevant indicators for the presence of CSO values; 2) it was not useful to tie each indicator to only one value; 3) the indicators were more 'universal' than the values for which they had been derived; 4) these indicators were not considered valid by the user CSO without being 'localized'; 5) the use of our values-based framework caused substantive transformational learning within this CSO. The importance of these findings to studies on values and to design issues central to formal values-based measurement work, such as face validity and catalytic validity, is drawn out. The principles of emancipatory action research used are shown to be key to the results, which themselves form foundational elements that led to key and significant understandings and modifications of the values-based framework.

Schwartz, S. H. (2012). "An overview of the Schwartz theory of basic values." Online Readings in Psychology and Culture **2**(1): 11.

This article presents an overview of the Schwartz theory of basic human values. It discusses the nature of values and spells out the features that are common to all values and what distinguishes one value from another. The theory identifies ten basic personal values that are recognized across cultures and explains where they come from. At the heart of the theory is the idea that values form a circular

structure that reflects the motivations each value expresses. This circular structure, that captures the conflicts and compatibility among the ten values is apparently culturally universal. The article elucidates the psychological principles that give rise to it. Next, it presents the two major methods developed to measure the basic values, the Schwartz Value Survey and the Portrait Values Questionnaire. Findings from 82 countries, based on these and other methods, provide evidence for the validity of the theory across cultures. The findings reveal substantial differences in the value priorities of individuals. Surprisingly, however, the average value priorities of most societal groups exhibit a similar hierarchical order whose existence the article explains. The last section of the article clarifies how values differ from other concepts used to explain behavior—attitudes, beliefs, norms, and traits.

Schwartz, S. H., et al. (2012). "Refining the theory of basic individual values." Journal of personality and social psychology **103**(4): 663.

We propose a refined theory of basic individual values intended to provide greater heuristic and explanatory power than the original theory of 10 values (Schwartz, 1992). The refined theory more accurately expresses the central assumption of the original theory that research has largely ignored: Values form a circular motivational continuum. The theory defines and orders 19 values on the continuum based on their compatible and conflicting motivations, expression of self-protection versus growth, and personal versus social focus. We assess the theory with a new instrument in 15 samples from 10 countries (N • 6,059). Confirmatory factor and multidimensional scaling analyses support discrimination of the 19 values, confirming the refined theory. Multidimensional scaling analyses largely support the predicted motivational order of the values. Analyses of predictive validity demonstrate that the refined values theory provides greater and more precise insight into the value underpinnings of beliefs. Each value correlates uniquely with external variables.

Seppälä, T., et al. (2012). "Change-oriented organizational citizenship behaviour: An interactive product of openness to change values, work unit identification, and sense of power." Journal of Occupational & Organizational Psychology **85**(1): 136-155.

Due to the increased frequency of organizational changes, predicting employees' voluntary involvement in the development of organizational practices and individual work is of particular importance in organizational psychology. This study focused upon change-oriented organizational citizenship behaviour (OCB) as an expression of openness to change values, and also upon psychological factors that can moderate the value-behaviour relationship. We propose that personal values, group identification, and a sense of power interact in predicting change-oriented OCB of employees. One hundred and eighty-four employees rated their values, their identification with the work unit and their sense of power. In line with our predictions, the results showed that openness to change values and work unit identification interacted positively in predicting supervisor-rated change-oriented OCB in workers with a high sense of power, but not in workers with a low sense of power. This finding suggests that workers who have a high sense of power and are highly identified with the work unit tend to pursue their openness to change values in a way that contributes to the organization. The authors further conclude that an interactive approach, rather than one of direct effect, is advantageous when studying values as antecedents to change-oriented OCB.

Shilton, K. (2013). "Values Levers: Building Ethics into Design." Science, Technology & Human Values **38**(3): 374-397.

As information systems transform our world, computer scientists design affordances that influence the uses and impacts of these technological objects. This article describes how the practices of design affect the social values materialized in emerging technologies, and explores how design practices can encourage ethical reflection and action. The article presents an ethnography of a laboratory that engineered software for mobile phones to track users' locations, habits, and behaviors. This technical work raised a number of ethical challenges, particularly around questions of data use and surveillance. The ethnography suggests that particular activities within laboratories can help engineers agree on social values as important to design. It characterizes these activities as values levers: practices that open new conversations about social values and encourage consensus around those values as design criteria. Laboratory leaders and advocates can enable and strengthen these levers to encourage ethical reflection and action as an explicit part of design practice.

Steen, M. and I. van de Poel (2012). "Making Values Explicit During the Design Process." Technology and Society Magazine, IEEE **31**(4): 63-72.

Vecchione, M., et al. (2014). "Personal values and political activism: A cross-national study." British Journal of Psychology.

Using data from 28 countries in four continents, the present research addresses the question of how basic values may account for political activism. Study 1 (N = 35,116) analyses data from representative samples in 20 countries that responded to the 21-item version of the Portrait Values Questionnaire (PVQ-21) in the European Social Survey. Study 2 (N = 7,773) analyses data from adult samples in six of the same countries (Finland, Germany, Greece, Israel, Poland, and United Kingdom) and eight other countries (Australia, Brazil, Chile, Italy, Slovakia, Turkey, Ukraine, and United States) that completed the full 40-item PVQ. Across both studies, political activism relates positively to self-transcendence and openness to change values, especially to universalism and autonomy of thought, a subtype of self-direction. Political activism relates negatively to conservation values, especially to conformity and personal security. National differences in the strength of the associations between individual values and political activism are linked to level of democratization.

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Appendix 3 Research Design and Methods Appendices

Contents

Appendix 3.1 Ethics Documents & Procedures

Contents

Appendix 3.1.1 Ethics Procedures

1. Introduction

Agreements to gain access to participants have been attained through the university Research Ethics Committee. The treatment of human participants and data included the items outlined in Table 12 and summarised in the following sections, with the suite of ethics documents included at the end of this summary.

Table 12 Ethical Procedures; treatment of human participants and data

Treatment	Item
Treatment of human participants, including issues of:	Institutional permissions, including committee approvals that were obtained.
	Ethical matters related to recruitment materials and processes and a plan to address them.
	Ethical matters related to data collection locations.
	Ethical matters related to data collection activities (these include participants refusing participation or early withdrawal from the study and response to any predicable adverse events) and a plan to address them.
Treatment of data is described (including archival data), including issues of:	How data are anonymised and kept confidential and any matters related to each.
	Protection for confidential data, data storage procedures, data dissemination, who had access to the data, and when the data will be destroyed.

2. Research Ethics, application

Application for ethical approval from the institutional Research Ethics Review Board was submitted with the above-mentioned information and included an ethics questionnaire as Table 13 below, with additional reflection on relevant questions below.

Further reflections on ethical issues that were relevant for the consideration of the School Research Ethics and Governance Committee in regard of this research project were also provided on two items considered particularly relevant for this study, as Table 17 below.

Furthermore, with respect to both questions on sensitive topics and psychological stress, participants had an opportunity to ask questions and discuss any issues at the end of face-to-face engagements, and contact details were provided to them to follow up any concerns or further questions they might have had. Whilst any awareness that might have been raised of a practitioner's sustainability commitment and skills may have caused limited psychological irritation, this is not beyond what would be expected to be encountered in normal practice and was therefore considered an ethical approach to the subject matter with the participants.

'yes' or 'no' ticked for each question	Yes	No
1. Is this research likely to have significant negative impacts on the environment? (For example, the release of dangerous substances or damaging intrusions into protected habitats)		X
2. Does the study involve participants who might be considered vulnerable due to their age or to a social, psychological, or medical condition? (Examples include children, people with learning disabilities or mental health problems; participants who may be considered vulnerable are not confined to these groups)		X
3. Does the study require the co-operation of an individual to gain access to the participants? (e.g. a teacher at a school or a manager of sheltered housing)		X
4. Will any participants be asked to discuss what might be perceived to be sensitive topics? (e.g. sexual behaviour, drug use, bullying, religious belief, detailed financial matters)	X	
5. Will any participants be involved in repetitive or prolonged testing?		X
6. Could participants experience psychological stress, anxiety, or other negative consequences (beyond what would be expected to be encountered in normal life)?	X	
7. Will any participants be likely to undergo vigorous physical activity, pain, or exposure to dangerous situations, environments, or materials as part of the research?		X
8. Will photographic or video recordings of research participants be collected as part of the research?		X
9. Will any participants receive financial reimbursement for their time? (excluding reasonable expenses to cover travel and other costs)		X
10. Will members of the public be indirectly involved in the research without their knowledge at the time? (e.g. covert observation of people in non-public places, the use of methods that will affect privacy)		X
11. Does this research include secondary data that may carry personal or sensitive organisational information? (Examples of sensitive secondary data include datasets held by organisations, patient records, confidential minutes of meetings, personal diary entries).		X
12. Are there any other ethical concerns associated with the research that are not covered in the questions above?		X

Table 13 Ethics Checklist

3. Participants and data

Study participants were project professionals (e.g. client team leaders, project managers, architects, design engineers, masterplanners, lead designers, etc.), recruited through the methods identified above. Participant information sheets were provided about the general research project to every participant digitally in advance of data generation and physically at each data generation session. This included the information shown in Table 14 . Meeting information sheets about the specific meeting were provided to every participant digitally in advance of data generation and physically at each data generation session. This included the information in Table 16 . Research Consent Forms about were provided to every participant digitally in advance of data generation and physically at each data generation session. This included the information in Table 15 .

Table 17 Ethics issues specific to this study

Question 4	Sustainability may or may not have been perceived as a sensitive topic; the point is being raised here in the interest of thoroughness. Sustainability is built into statutory planning and Building Regulations and therefore should not be controversial, but may have been perceived as challenging (i.e. difficult to achieve practically). Participants were asked about their approaches to design for sustainability and how they engaged their clients in these matters. A review of the implications suggests this may have raised their awareness of their own commitment to and skills in sustainability and sustainable design, as well as their own professional competence in these regards. The meetings, interviews or questionnaire/survey questions provided another avenue for self-reflection in addition to Continuing Professional Development systems that were already in place in most (if not all) built environment professional standards. Sustainability is therefore not beyond what would be expected to be encountered in normal practice.
Question 6	As per the response to Question 4 above, whilst any awareness raised of sustainability commitment and skills may have cause very minor psychological stress, this was not beyond what would be expected to be encountered in normal practice. Again, the point is being raised here in the interest of thoroughness, and the point about Continuing Professional Development systems reiterates that the engagements provided another avenue for self-reflection. Furthermore, it is hoped this provided a positive learning opportunity for participants to experience and embrace broader perspectives about sustainability and their practice. It may have enabled participants to view their activities through 'a values lens,' with which they may also use to view their thoughts and experience.

Table 16 Meeting information provided

#	Information
1	Study title
2	Invitation
3	What is the purpose of this conversation?
4	What do I need to know about answering the
5	questions?
6	Contact Details

Table 14 Participant information provided in advance

#	Information provided
1	Invitation
2	The purpose of the study
3	Reason for being chosen
4	Choice of having to take part
5	What happens to participants if they take part
6	What exactly will happen in the session
7	What participants are being asked to do
8	Possible disadvantages and risks of taking
9	part
10	Possible benefits of taking part
11	Terminating participation in the study
12	Confidentiality
13	What will happen to the results of the research
14	study?
	What to do if there is a problem
	Contact Details

Table 15 Research consent items

#	Consent
1	Confirmation that the participant has understood the study and its expectations.
2	Confirmation that the participant has read and understood the information sheet.
3	Confirmation that the participant knows exactly what they are being asked to do.
4	Confirmation of confidentiality arrangements.
5	Confirmation of the participant's right to withdraw.
6	Confirmation of how the information will be used.
7	Confirmation that the participant agrees to take part.

4. Confidentiality

Confidentiality was taken extremely seriously and therefore safeguarded during and after the study. The study involved audio-recording via digital voice recorder, as it was necessary to capture details of the conversation not possible to document using traditional pen-and-paper note-taking. Complete and strict confidentiality was maintained. Any use of direct quotations was completely anonymised with any uniquely identifiable details of names, companies, and project specifics removed or anonymised using a unique and purpose-designed algorithm developed only for this study by the author. The techniques followed are as Table 18.

Table 18 Confidentiality techniques

#	Technique
1	Any information provided was recorded digitally;
2	Only anonymous excerpts from the research were used;
3	Data was stored securely (in locked drawers and/or in password protected files);
4	Data was used only as part of this research in analysing, writing up and disseminating the research (including in the thesis/dissertation which will be held in the School of the Environment & Technology, University of Brighton);
5	Only the researcher and immediate supervisors had access to view data, and immediate supervisors only had access to anonymised data;
6	Data was used for anonymised research and teaching purposes only;
7	The 'raw' data was retained and if necessary, disposed securely;
8	The researcher has kept all personally identifiable information private and confidential in all discussions about the project.

5. Location

Study settings or venues were best situated in locations and premises relevant to the study participants to facilitate a more thorough understanding of the prevailing culture and conditions in which design decision-making is undertaken, therefore all the data generation was undertaken in the participants' own offices. Follow-up clarifications were requested according to §3.4.5.

6. Participant Selection Ethics

The research has been conducted as entirely non-discriminatory and, as such, participants for the study were not restricted in any way whatsoever by gender, sexual identification, (dis)ability, religious or social or ethnic group or background, or place of birth, etc. The only restrictions present in the study were 'structural' as embedded in the design and aims of the study, whereby the study participants are limited to the industry and disciplinary profession in which they are constituents as part an existing pool. It was not envisaged this would play a significant role in the study. For logistic reasons mentioned above, the location of the study was limited to the south-east of England, with all participants located in the Sussex counties. Key informants were initially identified based on having a minimum of 10 years of professional experience; this would necessarily put participants, in the starting age range of approximately 32-35 years old. Although only asked if participants met the minimum experience level, they were not asked their ages; it is estimated that at the times of interviewing the least-experienced participant was approximately 32-34 and the most-experienced was approximately 72-75 years old, with the other participants estimated to fall fairly evenly across this range of experience (generally around 10-year increments between them). The level of experience is treated in Chapters 4-5 findings.

Appendix 3.1.2 Ethics Checklist: MPhil & PhD Student

University of Brighton
School of Environment and Technology
Mphil/PhD Ethics Checklist

Section A: Project details

1. Name of student: **RICHARD PERRY KULCZAK, 14803685**
2. Name of supervisor: **Dr. POORANG PIROOZFAR (first)**,
Prof. Dr. MARIE HARDER (second)
3. Title of project: ***Accelerating Architectural Sustainability Transitions: Examining human values and problem framing in pro-sustainability design decision-making***

4. Outline of the research (392 words): *[References omitted]*

In the complex practice of building design, both decision-making and participation in its processes are utilised in this research as key focal points to pinpoint the principal human activities that drive sustainability outcomes in architecture. The purpose of this research is to understand the use of holistic problem framings and human values-based decision-making methods in design project teams' engagement of stakeholders and decision-makers. This is being researched in order to ascertain the roles that values and frames play in facilitating consistently pro-sustainability decisions throughout the design decision-making process. Fundamentally, the intention of the research is to determine how practitioners are able to encourage pro-sustainability decision-making (or PSDM) through participation, problem-framing, values-engagement, process reinforcement and change management. Through enquiries with key decision-making stakeholders and project professionals, it is intended to understand their engagement and decision-making processes. This is to determine not only the contexts, cultures and inter-process activities and outcomes (e.g. motivations, interests, values, goals, etc.), but also their perceptions of the process itself.

To triangulate the data, three methods of data collection are proposed to be undertaken sequentially in increasing levels of detail and contact: 1) formal literature review of previous studies on decision-making, values and sustainability, in any context (providing secondary data); 2) practitioner and stakeholder surveys or questionnaires (providing primary data); and 3) respondent interviews and/or focus groups. The latter, forming the majority of primary data collection, would employ semi-structured meetings that utilise open-ended questioning to allow for some degree process direction and control whilst allowing participants to be sufficiently expressive to provide richer insights. The data will also be triangulated by analysing the three perspectives obtained from project design teams, external stakeholders and clients.

Study participants, such as key decision-making stakeholders and project professionals (e.g. client team leaders, project managers, architects, masterplanners, lead designers, etc.), will be recruited through a few possible methods: direct solicitation of personal professional contacts of either the researcher or his supervisor(s); referrals from those contacts for other potential participants; 'LinkedIn' and 'LinkedIn Groups' contacts;

‘routed’ introduction through construction industry professional bodies and associations (i.e. non-trade associations); etc.

Study settings or venues are currently envisaged to be best situated in locations and premises relevant to the study participants to facilitate a more thorough understanding of the prevailing culture and conditions in which design decision-making is undertaken, most likely to be the offices of the participants.

5. Timescale and date of completion: c1.75yrs; estimated submission

6. Location of research: Cockcroft Building and Watts Building, University of Brighton; and most likely the offices of the participants.

Section B Ethics Checklist questions

Please tick either 'yes' or 'no' for each question	Yes	No
1. Is this research likely to have significant negative impacts on the environment? (*For example, the release of dangerous substances or damaging intrusions into protected habitats)*		X
2. Does the study involve participants who might be considered vulnerable due to their age or to a social, psychological or medical condition? (*Examples include children, people with learning disabilities or mental health problems; participants who may be considered vulnerable are not confined to these groups)*		X
3. Does the study require the co-operation of an individual to gain access to the participants? (*e.g. a teacher at a school or a manager of sheltered housing)*		X
4. Will any participants be asked to discuss what might be perceived to be sensitive topics? (*e.g. sexual behaviour, drug use, bullying, religious belief, detailed financial matters)*		X
5. Will any participants be involved in repetitive or prolonged testing?		X
6. Could participants experience psychological stress, anxiety or other negative consequences (beyond what would be expected to be encountered in normal life)?		X
7. Will any participants be likely to undergo vigorous physical activity, pain, or exposure to dangerous situations, environments or materials as part of the research?		X
8. Will photographic or video recordings of research participants be collected as part of the research?		X
9. Will any participants receive financial reimbursement for their time? (*excluding reasonable expenses to cover travel and other costs*)		X
10. Will members of the public be indirectly involved in the research without their knowledge at the time? (*e.g. covert observation of people in non-public places, the use of methods that will affect privacy)*		X
11. Does this research include secondary data that may carry personal or sensitive organisational information? (*Examples of sensitive secondary data include datasets held by organisations, patient records, confidential minutes of meetings, personal diary entries).*		X
12. Are there any other ethical concerns associated with the research that are not covered in the questions above?		X

Please add any further comments on ethical issues that may be relevant for the consideration of the School Research Ethics and Governance Committee in regard of this research project:
Not applicable

Please sign below to confirm that you have completed the Ethics Checklist.
Signed (student):

Date:

Signed (Supervisor):

Date:

If any of the questions in the checklist have been answered '**YES**', then the research student will be required to complete an **Ethics Approval Form** that should be submitted along with this Ethics Checklist. The Ethics Approval Form should be approved and signed by the supervisor before submission to the Chair of the Research Ethics and Governance Committee.

If all of the questions in the checklist have been answered '**NO**', then the Ethics Approval Form does not need to be completed and submitted with this form.

This Ethics Checklist should be submitted along with, if appropriate, the Ethics Approval Form to the Chair of the School of Environment and Technology Research Ethics and Governance Committee. The supervisor is required to keep a copy of the Ethics Checklist. If the project changes significantly, a new checklist must be completed.

Appendix 3.1.3 Timeline for Data Destruction

Three streams of Data Destruction:

On Request

Any participants that specifically request their data be destroyed will be noted and advised that the proposed timescale for data destruction is 2-years post PhD completion, with completion taken as the latter date of either termination of student registration, or official final documentation of PhD award.

Hard Copies

Hard Copies of signed documents are scanned into a PDF and filed according to project filing 516rocedures and anonymised according to the project anonymity algorithm previously mentioned in the Application Form. Hard Copies of personally identifiable information will therefore be destroyed during the data analysis phases of the project. As such this is envisaged to begin in the order of 1.75-years from the date of submission of this form.

Digital Information

It is proposed that the digital information will be retained for further reference and post-doctoral work. Any digital information will be digitally shredded using a proprietary security software program such as AVG, Norton, Avast or MS Security Essentials. With post-doc work taking approximately 5-years, it is proposed to shred any digital information at the latter date of 5-years after post-doc completion or 10-years after final documentation of PhD award. This is to retain any relevant information for future research and publication.

Appendix 3.1.4 Ethics Forms

Participant Information Sheet

Study title

Human Influences in Design Decision-making Processes Involving Sustainability

Invitation

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Talk to others about the study if you wish. Please ask the researcher if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

What is the purpose of the study?

The interactions between clients and architects as key design decision-makers, and the human influences in design decision-making processes involving project sustainability are not well understood. This is a PhD research project to analyse these issues.

Why have I been chosen?

Participants have been invited based on their professional roles as Architects having a previously designated level of professional practice experience with (or directly exposed to) sustainability issues in building design.

Do I have to take part?

No. It is up to you to decide whether or not to take part. If you do, you will be given this information sheet to keep and be asked to sign a **consent form**. You are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect you in any way.

What will happen to me if I take part?

The research study involves your participation in an interview-type conversation led by the researcher, and later participation in a focus group workshop with your work colleagues and filling out one survey/questionnaire. This may or may not include:

- One initial meeting that is expected to last approximately 1.5 hours, but could last a little longer depending on the direction of the conversation;
- A later focus group workshop with your colleagues to understand worthwhile and significant matters
- Reading and filling out a survey/questionnaire

If it is necessary, you may be kindly requested to participate clarify any points essential to utilise the results of the research, via follow-up telephone call or email correspondence.

What exactly will happen?

- The meeting will start with a brief introduction by the researcher and explanation of the process, where you will have been given this Sheet and a Consent Form to sign indicating your consent to proceed;
- An overview of the meeting agenda will then be discussed;
- Several topics will be raised about which you will be asked to comment or discuss your experiences;
- Surveys/questionnaires may either be given at the end or emailed to you for completion and return at a later date.

The study will involve audio-recording via digital voice recorder, as it is necessary to capture details of the conversation not possible to document using traditional pen-and-paper note-taking. *Complete and strict confidentiality will be maintained.*

Any use of direct quotations will be completely anonymised with any uniquely identifiable details of names, companies and project specifics removed or anonymised. Your consent will be needed for this and for any use of verbatim quotation in publications, which is referenced in the consent form.

What do I have to do?

The study requirements are limited to your participation in an interview-type meeting first, and then later a focus group with your colleagues which includes filling out a short questionnaire. If any clarifications are necessary, this may necessitate follow-up correspondence.

What are the possible disadvantages and risks of taking part?

The only foreseeable risks, discomfort or inconvenience involved are those associated with partaking in a meeting, and discussing your views and experiences of past events in a professional context.

What are the possible benefits of taking part?

Based on previous experience, individuals and companies have benefited from, A) the chance to reflect on their experiences, and B) from the outcomes of the focus group workshops, which have been used in organisational decision-making. Furthermore, the results will be made available to you first as a participant and any benefits of the research are first offered to you for your use subject to university and publishers regulations.

What will happen if I don't want to carry on with the study?

You can withdraw from the study at any time without incurring any negative effects.

Will my taking part in this study be kept confidential?

Your confidentiality is being safeguarded during and after the study. As such,

- Any information you give will be recorded digitally;
- Information you give may appear in the form of report(s) and/or scholarly journal article(s);
- Only anonymous excerpts from the research will be used in this write up;
- It will be stored securely (in locked drawers and/or in password protected files);
- It will be used as part of a PhD Research Project in analysing, writing up and disseminating the research (including in a thesis/dissertation which will be held in the School of the Environment & Technology University of Brighton);

- Only the researcher and the immediate supervisors of this dissertation will have access to view identifiable data for anonymised research and teaching purposes;
- The 'raw' data will be retained and if it is necessary to dispose it this will be done securely;
- The researcher will keep your information private and confidential in any discussions about the project whatsoever.

What will happen to the results of the research study?

The results of the research will be used in a PhD Research Project in analysing, writing up, and disseminating the research. It is intended to publish the results, which will be made available to you as a participant in its final presented form(s). You will not be identified in any report/publication unless you have otherwise consented to release such information.

What if there is a problem?

Any concerns or complaints you may have can be directed either to the researcher or to The School of Environment and Technology, 6th floor, Cockcroft Building, Lewes Road, Brighton, BN2 4GJ; entec@Brighton.ac.uk; for the attention of Dr. Poorang Piroozfar.

Contact Details

The study is supervised by Dr. Poorang A.E. Piroozfar and Prof. Marie K. Harder. The contact point for further information about the study is Richard Perry Kulczak, The School of Environment and Technology, Cockcroft Building, Lewes Road, Brighton, BN2 4GJ; entec@Brighton.ac.uk

Thank you very much; your participation is very important, as is your confidentiality.

Participant Consent Form

Study title

Human Influences in Design Decision-making Processes Involving Sustainability

Confirmation that the participant has understood the study and its expectations.

I agree to be involved in this research which investigates design decision-making processes. I give my permission to digitally record my participation and to use anonymised excerpts from the meetings and/or survey/questionnaires.

Confirmation that the participant has read and understood the information sheet.

Richard Kulczak has explained to my satisfaction the purpose of the study. I have been informed of the nature and purposes of the study and have read the information sheet. I understand the principles and processes of the study.

Confirmation that the participant knows exactly what they are being asked to do.

I am aware that I will be asked to discuss my experience and views about interacting with clients in design decision-making processes pertaining to sustainability and related topics raised about which I will be asked to comment or discuss my experience and views.

Confirmation of confidentiality arrangements.

*I understand that my personal details (including my contact details) will **remain completely confidential—unless otherwise specified**. Data will be stored in a secure area, password protected, and anonymised to ensure confidentiality, unless otherwise specified. I understand that relevant anonymous sections of information (data) generated during the study may be quoted and may be reviewed by the supervisors of this research for teaching and research purposes. I understand that only anonymous excerpts from the data will be used in write-ups.*

Confirmation of the participant's right to withdraw.

I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my rights being affected, and that there will be no adverse effects to leaving the study.

Confirmation of how the information will be used.

*I understand that the data collected will be used as part of a PhD Research Project. I understand that the data will be used in writing up and disseminating the research (including in a thesis/dissertation which will be held in the University of Brighton), as well as other PhD students that may build on the work and be given permission to view and utilise the data under the same agreement. **I understand that only anonymised excerpts from the research will be used in write-ups, unless otherwise specified.***

Confirmation that the participant agrees to take part.

I agree to take part in the above study.

_____	_____	_____
Name of Participant	*Date*	*Signature*

Richard Perry Kulczak

_____	_____	_____
Researcher	*Date*	*Signature*

Participant Information Sheet: Conversation Meeting

Study title

Human Influences in Design Decision-making Processes Involving Sustainability

Invitation

You are being invited as part of a PhD research study to take part in a confidential and anonymised conversation about your experiences and views. Please take time to read the following information carefully. Talk to others about the study if you wish.

Please ask Richard Kulczak if there is anything unclear, or if you would like more information.

What is the purpose of this conversation?

The purpose of our meeting is to discuss *your conversations with clients in design decision-making for sustainability*, posed in the form of questions.

This includes 1) initially discussing sustainability, 2) deciding about committing to sustainable designs, and 3) processing changes, challenges, and conflicts to the project that affect its sustainability.

We are interested in how architects discuss sustainable design with clients and help them make decisions about it —A) what you talk about, B) the way you talk about it, and C) what is most worthwhile and meaningful to you and your client. This is starting from the very first time you make contact with a client, up until the point at which a firm decision is made to build a design.

What do I need to know about answering the questions?

There are no right or wrong answers. There are no particular responses the research is seeking or expecting, ***only that they pertain to specific clients and projects***. The purpose is simply to understand your conversations with clients.

> In this research, we talk about ***human values***—what is most worthwhile, meaningful, and significant to an individual. Values can also be described as what ***really*** matters to people, at the end of the day.
>
> We also talk about ***frames*** of communication—the way sustainability is characterised as a certain type of problem, issue, or matter about which a decision needs to be made.

When answering the questions, please think of a ***specific*** client and project, and specific meetings, interactions or instances and how it developed and progressed. If you are unsure about which project phase or stage to consider, concentrate on the *initial stages* of project inception leading into design confirmation.

Your responses will be completely anonymised, so please try to be as truthful and honest as possible.

Contact Details

The contact point for further information about the study is Richard Perry Kulczak, University of Brighton, C607 Cockcroft Building, Lewes Road, Brighton, BN2 4GJ; entec@Brighton.ac.uk

The study is supervised by Dr. Poorang A.E. Piroozfar and Prof. Marie K. Harder. In the event of any complaints, please contact Dr. Piroozfar, entec@Brighton.ac.uk.

Thank you very much; your participation is very important, as is your confidentiality.

Appendix 3.2 Judging Research Quality, Rigour, and Achievement

1. Judgment Criteria for Research Quality, Rigour, and Achievement

From an early stage in the research planning, an acute awareness of research quality and rigour led initially to two sources: Creswell's broad list of quality checks and validation methods (Creswell, 2007:207-209; Cousins and Chouinard, 2012), and Yin's (2009:40-45) four criteria for judging the quality of qualitative case study research designs. During the research and analysis design, further literature was consulted to expand the armoury of tools for quality and rigour with which to conduct the research (e.g. Morse et al., 2002; Onwuegbuzie and Leech, 2007; LeCompte and Goetz, 1982). Accordingly, the criteria for judging the quality and rigour of this research have been refined and updated from the research planning stage. To them has been appended two further categories of criteria for: 1) interpreting the case study findings and 2) ultimately judging case study achievement.

The purpose of quality planning and reviews in case study research is to design and assess the definition, application, and consistency of logic across the design, conduct, and interpretation of the research, ultimately to promote scientific rigour, authenticity and value (Yin, 2014; Creswell, 2007; LeCompte and Goetz, 1982). In essence, it is also a form of due-diligence that the research is, a) 'fit-for-purpose', b) conducted in accordance with its aims and objectives, c) delivers outcomes congruent with them (i.e. seeks to answer the questions asked, and if divergent explained how and why), and d) avoids manipulating variables (LeCompte and Goetz, 1982). The lack of rigour and quality can lead to poor science divorced from the situated social reality studied and lacking utility (Morse et al., 2002), credibility (Onwuegbuzie and Leech, 2007; LeCompte and Goetz, 1982), and, by extension, impact.

According to Morse et al. (2002), verification *strategies* for ensuring quality and rigour need to be employed during research design, its implementation, and during completion phases. These authors note how historically this has not always been the case, with researchers failing to take full responsibility for rigour and quality in their research (Morse et al., 2002). Responsibility has been taken seriously in the conduct of this research first, through the initial quality and rigour verification strategy introduced at Research Plan stage, second, when refined to account for research progress and recalibrations, and ultimately implemented throughout. The revised strategy, rationale for its employment, and its refinements are discussed in this section.

Rigour and quality manifest in terms of accuracy and replicability, resolving around strategies and tests for validity and reliability, respectively (LeCompte and Goetz, 1982). As LeCompte and Goetz explain: "While reliability is concerned with the replicability of scientific findings, validity is concerned with the accuracy of scientific findings (1982:32)." Both reliability and validity have come to be known as key measures of research quality (Yin, 2014) and rigour (LeCompte and Goetz, 1982); for these reasons, reliable and valid research are two of the three main sets of criteria for quality and rigour adopted in this research. Therefore, strategies for managing reliability and validity (Morse et al., 2002) and tests for checking them (Yin, 2014) have been utilised in this research. The third set of criteria regards the applicability of research and findings to other situations in the professional community and broader field, better known as generalisability. In the following sections, validity, reliability, and applicability are examined in turn.

2. Criteria for Judging Research Quality and Rigour

Designing in research quality was a multi-faceted endeavour comprised of several parts. Several previously mentioned qualitative methodological sources have been consulted and three main criteria for judging the rigour and quality of research have been identified: reliability, validity, and replicability, the latter of which concerns the generalisability of findings. Rigour in this research can be judged through accuracy which resolves around issues of validity and threats to validity; this is addressed specifically in the first section below. Research quality can be assessed in two forms: through replicability which resolves through reliability; and applicability which resolves around issues of generalisability and transferability. As previously introduced, three strategies of research management have been adopted to ensure the criteria identified for quality and rigour are adhered to and tests for them can ultimately prove successful. These management strategies are constant comparison and constant questioning, adaptive-responsive perspective scaling, and lenses of inclusion and/or exclusion. The tests and their criteria are each addressed in the three following sections.

2.1. Rigour through Accuracy: Validity and Threats to Validity

As introduced above, rigour resolves around the management and testing of accuracy, which is manifested as validity. Valid qualitative research accurately represents the world as it is experienced through descriptive, explanatory, hypothetical and/or theoretical statements that are trustworthy and faithful to the circumstances from which they are derived. Ensuring and verifying accuracy in qualitative research requires 'positively' encouraging its validity and 'negatively' assessing any threats to that validity (Yin, 2014). This is achieved through employment of well-designed strategies and tests. Case studies are designed to represent a specific "logical set of statements" in which a strong link is maintained from the research questions through to the interpretation of findings. The five key components comprising this case study logic were addressed in Chapter 2: 1) research questions, 2) propositions (hypothetical), 3) units of analysis, 4) logic linking data to propositions, and 5) interpretation criteria for findings. This logic can be *threatened* by confounding factors or unrecognised changes arising in the conduct of the research; these *threats to validity* can be *managed* and *tested* through several controls and assessments of the logic of the case study design and conduct. The validity of qualitative case study, much the same as in other qualitative research, can be categorised primarily under three headings (Yin, 2014:45-49): external validity, internal validity, and construct validity. These are discussed respectively following the next section on threats to validity.

2.1.1. Threats to Validity

Just as it is beholden upon the researcher to develop a strong case study logic, and then follow it through data generation to data analysis, so too is it paramount to periodically identify any threats to the validity of that logic (Yin, 2014). In the discussion on replication logic above in *Chapter 2* and in *Appendix 3*, the observations or generalisation drawn from specific analytical techniques such as cross-case replication (either theoretically or literally) can be disrupted by some confounding variable. It behoves researchers to identify and manage probable threats to the validity, such as confounding variables in weak analyses, insufficient evidence to support claims, poorly specified operationalised constructs, or researcher bias. For example, it is possible to use multiple sources of data on which to draw stable, multi-perspective, and cross-case observations "to rule out arguments based on a potential threat to validity (Yin, 2014:145)." Threats to validity can come through the research design, its conduct and data generation, the analysis and interpretation phases, or during the on-going writing process. Two strategies to manage threats to validity have been applied; first, on a context-dependent basis (i.e. in the research design, operationalisation, and analysis and interpretation (Onwuegbuzie

and Leach, 2007; Yin, 2014)); and second, as underlying and iterative management techniques. These are introduced respectively as follows.

Context dependent management of validity in the research has been addressed in three principal forms, which Yin (2014) posits are most important and relevant in case study research. *External validity* regards the research design and its conduct congruent with that design. *Construct validity* regards the specification of operational definitions and measures for the study variables identified in the research design. Finally, *internal validity* regards the accuracy of inferences drawn between data and observations and findings to arrive at conclusions that reflect the data (rather than spurious, forced or biased conclusions) (e.g. Onwuegbuzie and Leach, 2007; Yin, 2014). Three underlying and iterative research management control techniques were outlined in Chapter 3, Section 3.3.2, as constant comparison and continual questioning, adaptive-responsive perspective scaling, and lens of inclusion/exclusion. In the sections that follow, each of the three principal forms of validity are addressed and contextualised. This is followed by a two-part discussion of the factors around research quality.

2.1.2. External Validity

The first type of validity is the broadest and involves "defining the domain to which a study's findings can be generalised (Yin, 2014:46)," which estimates whether the results can apply beyond the immediate context in which the research was conducted. Ultimately, as Yin (2014) also advises, the form of research question will also have significant bearing on the applicability of results. He adds that *how* and *why* forms of research question lend themselves to greater generalisability, caveating that descriptive studies tending to address 'less pressing' *how* questions may be more difficult to generalise (Yin, 2014:48). Yet, as shown in *Box 1* and discussed in *Section 2.4*, it can be argued that *how* form of the refined principal research question gives rise to the *why* form of question. In this way, it is asked *why* the key variables are related in such a way as to promote or relegate sustainability in design decision-making processes, the analytical responses to which may likely be embedded in the rich descriptions sought.

The domains in this research can be defined according to four broad criteria: by location geographically, by field professionally, by entity organisationally, and by 'layer' of human conduct conceptually. These can range from direct domain transference that is quite certain, to broad domain applicability that is plausible but uncertain. It is addressed through the research design and each of the criteria has been captured with the level of plausibility of their transference in *Table 19*, below.

Table 19 External Validity Criteria by Domain and Transference Plausibility

Domain →	**Location, Geographically**	**Field, Professionally**	**Entity, Organisationally**	**'Layer' of Human Conduct, Conceptually**	
Transference ↓				Values	Frames
Entirely plausible	South-east Region	Architectural Design	Architectural Design practices	Sustainability-related values	Sustainability frames
	Nationally	Design for Built Environment	Built Environment Design practices	Design-related values	Design frames
	European or English-speaking	All design	All design practices	All project-related values	All interpersonal frames
Uncertain but plausible	All regions internationally	All fields	All organisations	All values	All frames mental, interactive and collective

Yin (2014:45) also describes the strategy for achieving external validity through *replication logic* in multiple-case studies, such as the current study. This is addressed in Section 3.2.4. With external validity addressed through the research design, the next logical test is on construct validity, addressed in the data generation and its design.

2.1.3. Construct Validity

The second form of accuracy test regards the way in which data is generated to curtail effectively the subjective choices of researchers in selecting the informants and participants for case study research. Such subjectivity, which ultimately tends to "confirm a researcher's preconceived notions (Yin, 2014:46)," is managed through the "prior specification of the significant operational events (op.cit.)" and specific, key concepts defining or contained in those events that are tied to the research question. In this way, key constructs are operationalised so that readers of the research can judge whether the reported results genuinely follow from or reflect the events that happened, or the results are "based on a researcher's impressions only (op.cit.)." Yin (2014) provides two criteria against which operationalised constructs should be examined:

1 The event or process studied (i.e. framing) is defined in terms of specific concepts which are directly related to the original objectives of the study

2 Operational 'measures' or gauges are identified that provide a basis for comparison as a reference point against which the process and its concepts can be evaluated

Translated into the current context, the following two criteria read as follows:

1 The influence of values on framing sustainable design as a decision problem has been defined in terms of specific concepts directly related to the study objectives. Each concept as a component of the framing event is defined operationally in *Section 4.2*: Decision-making process, frames and problem framing, values, and sustainability. *Chapter 4* additionally specifies concept of influence (*Section 5.2*).

2 The definitions above specify not only the concept as an abstraction but also identify the operational measure, reference point, comparison statement or *indicator* of the concept, i.e. what influence looks like in practice, as the degree, magnitude and direction of an interaction and relationship manifesting as *pattern of experience*.

To increase the validity of constructs studied, all three of Yin's (2014:45) techniques or 'tactics' have been or will be used in this research: using *multiple sources of evidence* (see data generation methods section); *establishing chains of evidence*; and *informant checking*. Chains of evidence must satisfy three criteria according to Yin (2014:45 and 237). First, *chains of evidence* show how findings are linked to or reflect the data generated by using vignettes and direct quotations from key informants to illustrate inferences, abstractions, and analytical generalisations, indicating how conclusions follow from premises based in the evidence. Second, they demonstrate how the data and any observations analytical, theoretical, or otherwise are linked to or relate to the research questions. Third, how observations and conclusions are linked to or relate to the case study design and its procedures. These points are taken up in the analyses and findings in *Chapter 3*. *Informant or member checking* necessarily entails an administrative workload, the time for which is programmed post-transfer. The last of three validity tests regards the data analysis and tests to it, but should also be applied in both the design and conduct of the data analysis and interpretation.

2.1.4. Internal Validity

As introduced above, internal validity regards the accuracy of causal inferences drawn between data and observations and interpretations (Yin, 2014). Inferences are made when a statement is formulated about a causal relationship for and event that has not been directly observed (op.cit.). Internal validity therefore only regards explanatory or

causal case studies that involve causation and do not necessarily relate to exploratory or descriptive studies (Yin, 2014). Ultimately the goal of internal validity is to ensure any conclusions reflect the data rather than spurious, forced, or biased conclusions (e.g. Onwuegbuzie and Leach, 2007; Yin, 2014). The point about statements that are spurious or forced indicates the possibility of alternative explanations that could better describe the event or causality were the study designed to capture and assess those alternatives, i.e. that X causes Y (or Y is the result of X) is due to Z rather than some other confounding or unobserved factor, C or U (Yin, 2014:47). The point of biased conclusions raises questions about correct inferences, sufficient and convergent evidence, and effective controls for identifying relationships between data and any interpretations (e.g. Yin, 2014:47-48).

Addressing threats to internal validity, or the relationship between empirical data, findings, and their interpretations, is managed through two principal strategies. First, through the design of the study to devise and test rival explanations, and second, to analyse the data using rigorous, systematic, linked and recorded steps and methods (Yin, 2014). In addition to the strategy of managing rival explanations, Yin (2014:48) offers three further strategies for addressing internal validity through linked data analysis: pattern matching, explanation building, and the use of logic models. The issue of rival explanations is addressed in *Section 3.2* below, whereas the analytical strategies to address linking propositions to data to promote internal validity are discussed extensively in Chapter 4, and particularly in the analytical framework summarised in *Section 7*.

2.2. Quality through Reliability and Replicability

In addition to the foregoing, Yin (2014) posits one final test for judging case study research design quality: reliability. Reliability resolves around internal and external research design quality, whereas validity resolves around construct design and the effectiveness of conclusions flowing from both argument and evidence (LeCompte and Goetz, 1982) manifesting in terms of internal and external design, and ultimately reporting of findings (Yin, 2014). In short, reliability must be addressed in and through data collection by "demonstrating that the operations of a study—such as the data collection procedures—can be repeated, with the same results (Yin, 2014:44)." However, this comes with a distinct and easily overlooked caveat. If the aim is reliability, then the objective is *case* repeatability; ultimately, "the goal of reliability is to minimize the errors and biases in a study (Yin, 2014:49)." Both reliability and its repeatability objective are addressed as follows, and this caveat is examined in the section following the next.

2.2.1. Reliability

Fundamentally, reliability is an issue of operationalisation, documentation, and auditability (Yin, 2014:49). Holistically, this is achieved not only through operationalising variables and processes in data generation, recording, and analysis, but also the transparent linking of observations, claims, and findings back to the data. This, as previously suggested, is accomplished through informant quotes and vignettes, felicitous cross-references that annotate from whence a data slice came, and reciprocally accurate and detailed process documentation (e.g. Yin, 2014). Two strategies for ensuring accurate and reliable documentation are through the development and regular reference to, a) case study protocol, and b) case study database and filing system. The case study protocol is the detailed set of procedures or 'procedural guide' for data generation that includes field-based questions (Yin, 2014:240). In this research, the protocol includes, 1) the *Chapter 3* research design and methods framework and procedures, 2) the interview questions, informant information sheets and ethics forms, 3) the focus group values elicitation workshop plan, questions, and the participant information sheets, ethics forms, and PVQ-40 questionnaires.

The case study database is comprised of all the responses and data generated using the protocol, both stored digitally and physically. The principal function of the database is to

"preserve your collected data in a retrievable form (Yin, 2014:124)." In this study, data is held in four forms: digital audio recordings, digital transcriptions, hard-copies and scanned PDFs of questionnaires, and hard-copies and photographic evidence of the focus group clustered values statements (sticky notes on an A1 board). Thus, through reliable records, documentation, and following the procedures outlined in the study case study protocol, reliability is maximised. One particularly well-established method for demonstrating reliability is through study replicability. This is addressed next.

2.2.2. Replicability

Introduced as an overlooked caveat above, replicability in case study research emphasises "doing the same *case* over again, not on 'replicating' the results of one case by doing another case study (Yin, 2014:48-49, original emphasis)." Thus, the objective of replicability is to demonstrate that 'repeated operations' achieve 'same results' (Yin, 2014:46). In this way, proof of replicability is demonstrated by following the same procedures, conducting the *same* study, and arriving at the similar findings and conclusions (Yin, 2014:48; c.f. Onwuegbuzie and Leech, 2007:245). To clarify, earlier the *replication logic* was described in which repeating the same procedures on similar cases is a direct or *literal replication* to produce predictably similar findings across cases in a particular case grouping. The replicability of procedures to different case groupings that produce predictably different findings is a theoretical replication. Again, this is entirely different from attempts to *replicate results*, it is the *replication of operations* and procedures either on the same case to achieve the same results, or on different cases for anticipatably different findings.

Thus, in case study, reliability is achieved via thorough documentation and auditability of the research process and methods, in such forms as which methods were used, why, when, how, where, and with whom.

2.3. Quality through Applicability: Generalisability & Transferability

The third main criterion for quality and rigour is the notion of *applicability* of the research findings, to what they apply, and how. This is manifested in and resolves around issues of generalisability, a contested and occasionally misunderstood construct in social science research (Yin, 2014; Onwuegbuzie and Leech, 2007). Two types of generalisation of research findings have led to some confusion about what can be learnt from case study results and how results might be 'transferred' from one situation to another. *Statistical generalisation* is possible when research obtains quantitatively representative samples from a larger population, body, or universe, examines or conducts tests on those samples, and then infers statements about, relates, or statistically extrapolates the results from the smaller numbered representative samples as applicable to the larger numbered population or universe (e.g. Yin, 2014). As Yin (2014) advises, "an inference is made about a population or universe on the basis of empirical data collected from a sample of that universe (Yin, 2014:40)." These inferences or extrapolations are made on the basis of not only quantitative representativeness but also statistical significance—that the samples or 'sampling units' are of a quantity which confidently represents the population—there are strict quantitative procedures which determine the confidence with which an inference is made about the larger population (Yin, 2014). This is not at all appropriate in the current case study research to which none of this applies; as previously suggested, the number of informants or participants is "too small in number to serve as an adequately sized sample to represent any larger population (Yin, 2014:40)."

Furthermore, the purpose of the research was not to generalise to populations but to generalise to abstracted statements—or theoretical propositions—about concrete situations in social human conduct (Yin, 2014) which might then apply to other situations under certain specified conditions. This type is called *analytic generalisation* whose aim is twofold: first, to use case study data to produce abstracted statements and inferences

about human behaviour and situations with which to generalise to other concrete situations; and second, to contribute to abstract theory-building where appropriate (Yin, 2014). According to Yin (2014), analytic generalisations can be based on either: "A) corroborating, modifying, rejecting or otherwise advancing *[existing] theoretical concepts* referenced in designing the case study, or B) *new concepts* that arose upon completion of the case study (Yin, 2014:41, emphasis added)." This can be tabulated into the following form, shown in *Table 20*.

Table 20 *Aims and Bases of Analytical Generalisations (Yin, 2014:41)*

Aim	**To analytically generalise to other concrete situations**
	To contribute to abstract theory-building
Basis	Existing theoretical concepts from either extant literature or prior hypothetical propositions in the study
	New theoretical concepts built around the evidence from the case data generated

As previously introduced in the section above on the original case boundaries, it could be argued that results from the current category or segmentation of participants are expected to produce analytical generalisations in the form of abstracted theoretical statements that are applicable to a wider selection of practitioners and therefore potentially generate greater impact. Thus, not only was the *selection of informants and case boundaries* important to generalisability, but also the *variables studied,* and the *units of analysis* are defining criteria for generalisability. Both values and frames were previously identified as key, foundational variables in a pyramid of human behavioural influences that pertain to sustainability and decision-making processes. These variables are studied in the sustainable design problem framing conversation that takes place between stakeholders, and led by the architect as lead designer in the cases studied. Accordingly, it is expected that analytic generalisations will be formed about—and analytically generalizable to—*three 'layers' of human conduct* as it relates to sustainable design decision-making in particular, but potentially to decision-making on sustainability in organisations more generally, as follows. First, *the influence of values on frames* (both generally as broader human variables, and specifically as the way individual and multi-individual values come together and influence the problem framing of sustainability in frame-building scenarios). Second, the *interpersonal interactions* in the conduct of a potentially ongoing sustainability decision-making conversation (in which sustainability is introduced in one end and a decision or pseudo-decision is produced at the other end). Third, the broader *team-level dynamics* (that input into and ultimately affect the outcomes of problem framing and decision-making interactions).

These analytic generalisations will necessarily be made based on Yin's (2014) above-mentioned criteria of either, A) existing theoretical concepts, or B) new concepts built around the evidence extracted and analysed from the case data generated. In this way, it is therefore important to recognise the role and relevance of three aforementioned discussions, as follows. 1) In this chapter *Section 3.1* on *hypothetical propositions* in which several statements were 'built up' to guide and form the foundations for the research. 2) In this chapter *Section 3.5* above, on the epistemological or *philosophical framework* in which relevant theories are 'brought in' to help explain or describe the data. 3) In *Chapter 2* on the *theoretical framework,* in which extant theory built from empirical studies formed the basis of the data generation methods. Each of these three foundational structures may, in their own way, influence the development of any future analytical generalisations, abstracted statements, theoretical propositions, or theory. Together each of the two sets

of foregoing observations—the foundational structures and the predicted subjects of analytic generalisations—can be tabulated into the following form shown in *Table 21*.

Table 21 *Foundational structures and predicted applicability of analytic generalisations*

Foundational structures informing analytic generalisations	**1**	***Hypothetical propositions* in which several statements were 'built up' to guide and form the foundations for the research**
	2	*Philosophical framework* in which relevant theories are 'brought in' to help explain or describe the data
	3	*Theoretical framework* in which extant theory built from empirical studies formed the basis of the data generation methods
Predicted applicability of analytic generalisations	*Three 'layers' of human conduct* as it relates to sustainable design decision-making in particular but potentially decision-making on sustainability in organisations more generally**:**	
	A	*The influence of values on frames* (both generally as broader human variables, and specifically as the way individual and multi-individual values come together and influence the problem framing of sustainability in frame-building scenarios)
	B	*The interpersonal interactions* in the conduct of a potentially ongoing sustainability decision-making conversation (in which sustainability is introduced in one end and a decision or pseudo-decision is produced at the other end)
	C	*The broader team-level dynamics* that input into and ultimately affect the outcomes of problem framing and decision-making interactions

Each of these layers can be potentially transferrable to multiple fields of human endeavour including specifically: engineering design in both construction and non-construction fields; industrial and product design; to participatory design; and perhaps any field adopting design thinking as a way of approaching problems. Indeed, analytic generalisations can foreseeably be transferrable to considerably broader areas and fields outside of design in which the role of values on communication frames of particular contested issues in interpersonal and organisational contexts is of importance to the way in which messages are communicated. Furthermore, it is also foreseeable that, although the study has been conducted in a particular region of the United Kingdom, the findings may, as analytic generalisations be applicable and transferrable to other regions in the country. These may also find application to individuals and practices in other Western countries and indeed internationally to individuals and teams in organisations faced with formulating and framing sustainability and other environmental or contested issues in the context of decision-making processes.

In the next section, these points are taken up in the discussion on the first of two types of assessment criteria for the research, the interpretation criteria for reading and comprehending the findings.

3. Criteria for Interpreting Case Study Findings

As the fifth of five key criteria for the research design, case study interpretation resolves around clearly stating the criteria by which a case study might be interpreted (Yin, 2014). Such criteria provide principles and tools to demonstrate the appropriateness, adequacy, 'fit', and significance for interpretations and explanations in the findings (Yin, 2014:35-

36). In the following sections, two closely interrelated concepts involved in criteria specification are discussed: rival explanations and relational significance.

3.1. Relational Significance

Interpretation criteria are formed with regard to the rejection of opposing explanations, either termed *null hypotheses* quantitatively, or *rival explanations* qualitatively (in which one amongst many rival explanations could be a null hypothesis (Yin, 2014:141)). Where a key criterion in quantitative studies is the *statistical significance* of a result occurrence versus the null hypothesis (whereby the probability of a result occurring is due only to sampling error is statistically unlikely) (e.g. Sproull, 2002), the key criteria in qualitative case study research are the appropriate identification and defence of findings against *rival explanations* (Yin, 2014).

This principal strategy to interpret the case study findings against rival explanations involves unpacking the concept of rivals as they relate to the current qualitative study. The criteria can be argued to refer broadly to the relative applicability of the findings to their intended contexts as probable explanations in relation to rival explanations (or a null hypothesis). In this way, the significance of observed differences can be specified statistically for quantitative studies, or *relationally* for qualitative. One viable way to begin specifying such criteria is to determine whether the findings are contextually appropriate, accurate, and significant. This necessarily includes determining the extent to which the findings reflect the data and relate to the context in which they are intended. In quantitative studies, this is determined by specification of statistical factors, whereas in qualitative studies this extent can be determined by the specification of two facets regarding *accurate reflection* of data in the findings and *relational factors* of findings to the context. This effectively closes a conceptual loop whereby the extent to which findings relate to the data specifically, and to the possible broader contexts generally, is specified. This is illustrated in ***Error! Reference source not found.***. Whilst *accuracy* has been discussed above in the section regarding the rigour with which validity and its threats are handled, the contextual relationship of findings is specified by the applicability and replicability criteria also discussed above.

Another possible way to specify relational significance is the extent to which rival explanations have been identified, assessed, and subsequently ruled out or used to supersede or augment plausible explanations (Yin, 2014). By identifying possible rival explanations given the context in which the study has been designed to apply, the findings can be said to confidently apply and relate to the data in their relative contexts. The identification and assessment of rival explanations naturally builds on the specification/definitions of context and applicability ultimately to form a closed-loop of rigorous, systematic, and conceptually networked explanations that are therefore stable against possible falsification.

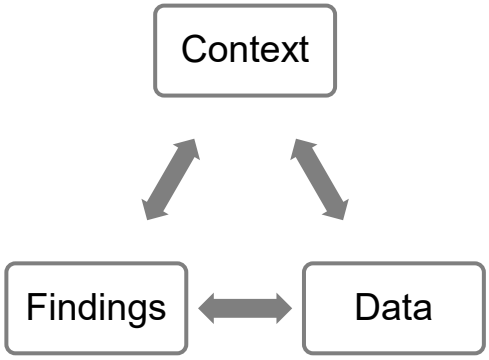

Figure 3 Closed Loop Findings

3.2. Rival Explanations

However, one question remains as to the operationalisation of the concept of rival or alternative explanations. This necessarily involves the identification of what a rival explanation is, how to know what it looks like, how to identify them, how to know when it is safe to stop looking for rivals, i.e. identification has reached saturation. These three facets are examined in turn. A rival explanation is a plausible alternative reason for the

observed outcomes other than those arrived at through the research process, or as Yin (2014:140) writes, "that the observed outcomes were in fact the result of some other influence besides [those investigated][7]." Two potential methods for identification of rivals include by *type* and by *contextual parameters* and/or their dimensions. Yin (2014:141) offers two *categories* of rivals comprising nine different types of rival explanations. A tenth meta-rival is added for posterity. These are tabulated in *Table 22*, below.

Table 22 *Categories and Types of Rival Explanations (adapted from Yin, 2014:141)*

Category of Rival	Type of Rival	Rival Type Description
Craft Rivals	Null Hypothesis (H_0)	The observed outcomes are not the result of those hypothesised, identified, or found, but some other influence*; X does not influence Y, it is purely chance*. Research H_0: *Human values do not influence the way in which stakeholders approach, frame, and discuss sustainability in design as a decision problem.*
	Threats to Validity	Problems with external, construct, or internal validity are unknowingly obscuring the real reason for the observed outcomes; *Z influences Y but has not been identified due to problems with the research design, conduct or analyses.*
	Investigator Bias	'Reactivity' or preconceptions are unknowingly brought into the analyses; *X influences Y because the investigator says so.*
Real-World Rivals	Direct Rival	Another, different explanation influences the observed outcomes; *Z influences Y, not X as hypothesised.*
	Commingled Rival	Both the hypothesised and another different explanation influence the observed outcomes; *X and Z both influence Y.*
	Implementation Rival	The process influences the observed outcomes; *Alphabet design influences Y not X or Z.*
	Rival Theory	The observed outcomes are better explained by a different set of statements. *42 better explains Y.*
	Super Rival	The observed outcomes are the result of a larger influencing factor. *The entire alphabet influences Y.*
	Societal Rival	The observed outcomes are the result of larger societal trends and conditions. *The nature of human communication influences Y.*
	Existential Rival	The observed outcomes are the result of human nature and the human condition. *Existence influences Y.*

Contextual parameters for specifying rival explanations include *strength* (how appropriate or accurate are the rivals), *magnitude* (to what extent they apply), and *directionality* (to what or between what the rivals apply).

Saturation necessarily involves: 1) considering whether all relevant rival explanations have been identified, 2) interpreting and effectively defending the findings against those rival explanations, and ultimately either 3) rejecting the rivals, adjusting the findings, or rejecting the findings and providing full explanations. Saturation is achieved through the identification of all rival explanations, which can be specified and limited in extent by, a) their relation and relevance to the epistemological scaffolding, b) their relevance to the context of the case study in terms of the case boundaries and unit of analysis, and c) the specification of intended generalisations. The findings can be then interpreted against (their relation and relevance to) the philosophical framework, the theoretical framework, and two key components of the methodological framework: the study design and ultimately its' generalisations, particularly in terms of the context in which it is specified and/or intended to apply. In this way, the findings may avoid misinterpretation against an inappropriate context, or conditions for which the study is not designed to apply.

[7] Yin's (2014:140) bracketed statement reads "… besides the planned intervention" which has been decontextualized here, as the current study is not about planned interventions, but other investigated influences.

Therefore, the rivals and findings must be interpreted against the background or underpinning frameworks, the study design, and its' context. As Yin (2014) suggests, "addressing such rivals becomes a criterion for interpreting your findings: the more rivals that have been addressed and rejected, the stronger will be your findings (Yin, 2014:36)."

In the next section, these points are taken up in the discussion on success criteria for achieving the intended aims and objectives.

4. Criteria for Judging Case Achievement

In its most basic form, achieving the aims and objectives of the study as initially identified should serve as the primarily criteria for judging case study success. Any such criteria should necessarily be aligned with, and include the purpose and driving questions to produce, at least four success criteria. These are examined and unpacked as follows, after which an additional and important set of criteria is addressed. Effectively this is a key exercise in reflexivity for the study and investigator to stand back and evaluate the outcomes of the research at key points in the development and conclusion of the work.

4.1. Criteria 1: Purpose

For the first criteria, the key driving questions and refined purpose have been recompiled, and then articulated as achievement criteria questions. Each of the two main criteria subjects and their topics are summarised in a single criterion, and are outlined as follows.

> **Summary Criterion 1:** How well has the study achieved its intended purpose(s)?

Research Questions The refined analytical research question is, *how do human values influence the way in which practitioners formulate and frame sustainability in design as a decision problem*? An additional question should ultimately be answered: *why might this be the case*? As part of the research question, a more recent methodological question has been appended: *How effectively has the data analysis design answered the research question*? The first criterion can be articulated as a question as follows.

> **Criterion 1.1:** How well has the analytical and methodological research questions been answered? Have responses been related back to the extant literature?

Purpose The refined analytical purpose of the research can be somewhat simplified: *to identify, analyse, evaluate, and explain the influence of values on sustainable design problem framing.* To this might be appended a practical purpose aligned with possible generalisations: *to relate the findings to design practice and sustainability management, with recommendations for changes, whether termed as policy, practice, or procedural recommendations*.

> **Criterion 1.2:** How well have the sought influences been explained, taking into account rival explanations? Have findings been related back to the extant literature? Have the findings been able to support any recommendations?

Objectives The ultimate analytical objective of this is to ascertain the roles and influences that values and problem frames play in sustainable design decision-making processes as they are experienced by architectural designers. To this a practical objective has been appended. It is currently envisaged that recommendations for action arising from analytical findings will be made, alongside a future research agenda. An additional fourth criterion regarding the contribution to knowledge should also be added to account for the ultimate aim of the research.

Criterion 1.3: How have the aims and objectives been achieved?

Criterion 1.4: Ultimately, how well has the original contribution to knowledge and its significance been articulated?

4.2. Criteria 2: Exemplary Study

Although the two previous categories illustrate the necessary criteria for achieving a solid level of accomplishment, the sufficiency of them to produce *exemplary* work can be debated (Yin, 2014). To go beyond mere technical accomplishment requires additional skill and insight involving an extension to include additional criteria. Five such criteria include *significance*, thorough or exhaustive *completeness*, consideration of alternative *perspectives*, display of sufficient *evidence*, and engaging *composition* (op.cit.). Effectively this is the difference between technically chronicling the case and adeptly producing "insights into human or social processes (Yin, 2014:201)." Each of the five criteria are briefly detailed and followed by a summary criterion as above.

Summary Criterion 2: In what ways could the study be considered exemplary?

Significance The extent of the study's *significance* can be confined to architects' standard practices in similar situations, or can be both unusual and extended to be of "general public interest" or 'national importance (Yin, 2014:201)' whether in theoretic, policy, or practical terms. Not only is the choice of field, area, subject, case and unit of analysis relevant, but the skill, grasp, perceptiveness, depth, breadth and/or interconnectedness of observations also play an important role in assisting to elevate the significance of outcomes. This has also been addressed through the aforementioned applicability criteria.

Criterion 2.1: How significant is the study and well has it been articulated?

Completeness Undertaking thorough and exhaustive research is both time-consuming and logistically challenging—how does one define *completeness*? By thoroughly examining data within and at the case boundaries, the 'analytic periphery' can be identified and addressed. Then, this "distinction between the phenomenon being studied and its context (Yin, 2014:202)" can increasingly lead to the identification and subsequent inclusion or discounting of new information as relevant, and consequentially it can be argued that the case boundaries are theoretically saturated (Yin, 2014:202-203). Completeness is, according to Yin (2014), not only saturating the analytic periphery but also convincingly demonstrating that all relevant evidence has been collected within those boundaries. This leads to the next criteria in which all relevant evidence also includes different viewpoints.

Criterion 2.2: How complete is the research? Has the analytic periphery been explored, articulated and defended?

Alternative Perspectives Exhaustive research also suggests that it addresses alternative *perspectives* on the unit of analysis; in the current research this takes multiple confounding forms. One form is addressing the alternative perspectives of three different *categories* of architectural design practitioners (i.e. self-identifying as commercially-, design-, or sustainability-oriented, whether technologists or architects). Another may be different experience levels and genders, and then further extension into different geographical contexts, different design disciplines, and further afield in terms of a broad range of stakeholders and even users. The relevance of different viewpoints can be argued as limited to a particular range of applicability, and will be addressed further in post-transfer analyses. Particularly worthwhile are those perspectives that purport to "challenge the assumptions of the study (Yin, 2014:204)." It is through the fair and

rigorous treatment of alternative perspectives and rival explanations, which are designed into and arising from data generation, that the subsequent analytical statements and interpretations are judged to be effectively addressing the data completely and impartially.

However, as previously suggested, the criteria of applicability, transferability and generalisability also put reasonable limitations on the extent of alternative perspectives addressable in a given study that does not attempt to universally solve the problem of the human condition. Both completeness and inclusion of alternative perspectives must somehow be limited to that which can be achieved in the timespan and resource availability for self-funding PhD research. This factor also places limitations on the extent of alternative perspectives addressable in the study. This, as Yin (2014:203) suggests, can be managed through effective research design that anticipates the potential limitations and addresses the 'artefactual conditions' and constraints to which all studies are prone. For this reason, criteria of applicability are identified and generalisations made within the extents of the criteria defined. However, also as previously suggested the potential exists for generalising the findings and any theoretical statements to situations both concrete and theoretic beyond those for which the study was intended. The cognisance of possibility for extension can provide sufficient impetus for that extension to be developed.

> **Criterion 2.3**: How well have alternative perspectives been incorporated?

Sufficient Evidence The display of evidence *both* necessary and sufficient brings a third view to the notion of completeness. Presenting the evidence necessary to demonstrate clear arguments drawn from data is uncontroversial. Whereas judging where and when sufficient evidence has been presented requires investigators to demonstrate *selectiveness* in displaying the *most salient* examples both supporting and contrary (Yin, 2014:205). In this way, the final case study report demonstrates how it will "judiciously and effectively present the most relevant evidence." Yet as Yin (2014) advises, it is not only in the sufficiently selective *presentation* of salient evidence, but also the confident demonstration that sufficient evidence has been *generated* from the field. This is evidenced by, a) demonstrating that field enquiries were effective and penetrating, b) illustrating an effective command of the issues, c) presenting salient examples that demonstrate a thorough knowledge of the subject matter, and d) that the evidence is valid and threats addressed (Yin, 2014:205).

> **Criterion 2.4:** Have both necessary and sufficient evidence been presented to account for the findings?

Engaging Composition Although dry terminology is used to identify the final case study 'report', this need not extend into the crafting of the writing. Turgid and uninviting prose is universally bemoaned in introductory research texts. In case study research, Yin (2014) offers several choice descriptions to illuminate the spirit of clear yet attractive writing, which comes with much practice, editing, and re-writing. Such descriptive criteria include *seducing the eye* with a *constantly enticing* manuscript; launching with an opening "that is *vivid* and *vital* (Yin, 2014:206, quoting Caulley, 2008:424; emphasis added)"; continuing with writing that is "*action-packed*"; communicating with *enthusiasm*; whilst *engaging* and *enticing* the reader to continue; crescendoing to significant, momentous, or even "earth-shattering" conclusions (Yin, 2014:206). The point is clear: interesting and engaging yet appropriate writing can help establish the study as exemplary.

> **Criterion 2.5:** How engaging is the case study composition?

4.3. Criteria Compilation

These criteria comprise a comprehensive set of examination standards against which the success of the case study can be judged. They have been compiled into tabulated form, shown in *Table 23*, below.

Table 23 *Criteria for Judging Case Achievement*

Criteria	Subject and Topic
Summary Criterion 1	**Intended purposes achieved**
1.1	Research questions answered
1.2	Purpose achieved
1.3	Aims and objectives achieved
1.4	Contribution to knowledge articulated
Summary Criterion 2	**Exemplary characteristics identified**
2.1	Significance articulated
2.2	Completeness and analytic boundaries articulated
2.3	Alternative perspectives considered and incorporated
2.4	Sufficient evidence considered and presented
2.5	Composed engagingly

5. Concluding Summary

This appendix introduced and then discussed in detail the research philosophy, methodology and research methods from data generation to processing. It comes accompanied by several other appendices.

Complex and ill-defined practical human problems, such as those investigated in this research, require systematic and methodical approaches and strategies to unpack and closely examine the variables at work. The research necessarily required a multi-layered design and this has been employed both in the research methods and the analytical framework designed. As the companion chapter to the next Appendix 4 on *Data Analysis Design, Methods, and Framework*, this appendix has been divided from it at a logical point: after data processing, and before the approach to analysis design. Therefore, a broader discussion of the strengths and limitations along with reflections on improvements is contained at the end of *Appendix 4*.

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Appendix 3.3 Data Generation Documents

Contents

Appendix 3.3.1 Values Questionnaires Female

PVQIV-F

Here we briefly describe some people. Please read each description and think about how much each person is or is not like you. Circle the number to the right to indicate how much the person in the description is like you.

Your Name:

	HOW MUCH LIKE YOU IS THIS PERSON?					
	Very much like me	**like me**	**some what like me**	**a little like me**	**not like me**	**not like me at all**
1. Thinking up new ideas and being creative is important to her. She likes to do things in her own original way.	5	4	3	2	1	0
2. It is important to her to be rich. S he wants to have a lot of money and expensive things.	5	4	3	2	1	0
3. She thinks it is important that every person in the world be treated equally. She believes everyone should have equal opportunities in life.	5	4	3	2	1	0
4. It's very important to her to show her abilities. She wants people to admire what she does.	5	4	3	2	1	0
5. It is important to her to live in secure surroundings. She avoids anything that might endanger her safety.	5	4	3	2	1	0
6. She thinks it is important to do lots of different things in life. She always looks for new things to try.	5	4	3	2	1	0
7. She believes that people should do what they're told. She thinks people should follow rules at all times, even when no-one is watching.	5	4	3	2	1	0
8. It is important to her to listen to people who are different from her. Even when she disagrees with them, she still wants to understand them.	5	4	3	2	1	0
9. She thinks it's important ***not*** to ask for more than what you have. She believes that people should be satisfied with what they have.	5	4	3	2	1	0
10. She seeks every chance he can to have fun. It is important to her to do things that give her pleasure.	5	4	3	2	1	0
11. It is important to her to make her own decisions about what she does. She likes to be free to plan and to choose her activities for herself.	5	4	3	2	1	0

	HOW MUCH LIKE YOU IS THIS PERSON?					
	Very much like me	**like me**	**some what like me**	**a little like me**	**not like me**	**not like me at all**
12. It's very important to her to help the people around her. She wants to care for their well-being.	5	4	3	2	1	0
13. Being very successful is important to her. She likes to impress other people.	5	4	3	2	1	0
14. It is very important to her that her country is safe. She thinks the state must be on watch against threats from within and without.	5	4	3	2	1	0
15. She likes to take risks. She is always looking for adventures.	5	4	3	2	1	0
16. It is important to her always to behave properly. She wants to avoid doing anything people would say is wrong.	5	4	3	2	1	0
17. It is important to her to be in charge and tell others what to do. She wants people to do what she says.	5	4	3	2	1	0
18. It is important to her to be loyal to her friends. She wants to devote himself to people close to him.	5	4	3	2	1	0
19. She strongly believes that people should care for nature. Looking after the environment is important to her.	5	4	3	2	1	0
20. Religious belief is important to her. She tries hard to do what her religion requires.	5	4	3	2	1	0
21. It is important to her that things be organized and clean. She really does **not** like things to be a mess.	5	4	3	2	1	0
22. She thinks it's important to be interested in things. She likes to be curious and to try to understand all sorts of things.	5	4	3	2	1	0
23. She believes all the worlds' people should live in harmony. Promoting peace among all groups in the world is important to her.	5	4	3	2	1	0
24. She thinks it is important to be ambitious. She wants to show how capable he is.	5	4	3	2	1	0
25. She thinks it is best to do things in traditional ways. It is important to him to keep up the customs he has learned.	5	4	3	2	1	0
26. Enjoying life's pleasures is important to her. She likes to 'spoil' himself.	5	4	3	2	1	0

	HOW MUCH LIKE YOU IS THIS PERSON?					
	Very much like me	**like me**	**some what like me**	**a little like me**	**not like me**	**not like me at all**
27. It is important to her to respond to the needs of others. She tries to support those she knows.	5	4	3	2	1	0
28. She believes she should always show respect to her parents and to older people. It is important to her to be obedient.	5	4	3	2	1	0
29. She wants everyone to be treated justly, even people she doesn't know. It is important to her to protect the weak in society.	5	4	3	2	1	0
30. She likes surprises. It is important to her to have an exciting life.	5	4	3	2	1	0
31. She tries hard to avoid getting sick. Staying healthy is very important to her.	5	4	3	2	1	0
32. Getting ahead in life is important to her. She strives to do better than others.	5	4	3	2	1	0
33. Forgiving people who have hurt her is important to him. She tries to see what is good in them and not to hold a grudge.	5	4	3	2	1	0
34. It is important to her to be independent. She likes to rely on herself.	5	4	3	2	1	0
35. Having a stable government is important to her. She is concerned that the social order be protected.	5	4	3	2	1	0
36. It is important to her to be polite to other people all the time. She tries never to disturb or irritate others.	5	4	3	2	1	0
37. She really wants to enjoy life. Having a good time is very important to her.	5	4	3	2	1	0
38. It is important to her to be humble and modest. She tries not to draw attention to himself.	5	4	3	2	1	0
39. She always wants to be the one who makes the decisions. She likes to be the leader.	5	4	3	2	1	0
40. It is important to her to adapt to nature and to fit into it. She believes that people should not change nature.	5	4	3	2	1	0

Appendix 3.3.2 Values Questionnaires male

PVQIV-M

Here we briefly describe some people. Please read each description and think about how much each person is or is not like you. Circle the number to the right to indicate how much the person in the description is like you.

Your Name:

	HOW MUCH LIKE YOU IS THIS PERSON?					
	Very much like me	**like me**	**some what like me**	**a little like me**	**not like me**	**not like me at all**
1. Thinking up new ideas and being creative is important to him. He likes to do things in his own original way.	5	4	3	2	1	0
2. It is important to him to be rich. He wants to have a lot of money and expensive things.	5	4	3	2	1	0
3. He thinks it is important that every person in the world be treated equally. He believes everyone should have equal opportunities in life.	5	4	3	2	1	0
4. It's very important to him to show his abilities. He wants people to admire what he does.	5	4	3	2	1	0
5. It is important to him to live in secure surroundings. He avoids anything that might endanger his safety.	5	4	3	2	1	0
6. He thinks it is important to do lots of different things in life. He always looks for new things to try.	5	4	3	2	1	0
7. He believes that people should do what they're told. He thinks people should follow rules at all times, even when no-one is watching.	5	4	3	2	1	0
8. It is important to him to listen to people who are different from him. Even when he disagrees with them, he still wants to understand them.	5	4	3	2	1	0
9. He thinks it's important ***not*** to ask for more than what you have. He believes that people should be satisfied with what they have.	5	4	3	2	1	0
10. He seeks every chance he can to have fun. It is important to him to do things that give him pleasure.	5	4	3	2	1	0
11. It is important to him to make his own decisions about what he does. He likes to be free to plan and to choose his activities for himself.	5	4	3	2	1	0

	HOW MUCH LIKE YOU IS THIS PERSON?					
	Very much like me	**like me**	**some what like me**	**a little like me**	**not like me**	**not like me at all**
12. It's very important to him to help the people around him. He wants to care for their well-being.	5	4	3	2	1	0
13. Being very successful is important to him. He likes to impress other people.	5	4	3	2	1	0
14. It is very important to him that his country be safe. He thinks the state must be on watch against threats from within and without.	5	4	3	2	1	0
15. He likes to take risks. He is always looking for adventures.	5	4	3	2	1	0
16. It is important to him always to behave properly. He wants to avoid doing anything people would say is wrong.	5	4	3	2	1	0
17. It is important to him to be in charge and tell others what to do. He wants people to do what he says.	5	4	3	2	1	0
18. It is important to him to be loyal to his friends. He wants to devote himself to people close to him.	5	4	3	2	1	0
19. He strongly believes that people should care for nature. Looking after the environment is important to him.	5	4	3	2	1	0
20. Religious belief is important to him. He tries hard to do what his religion requires.	5	4	3	2	1	0
21. It is important to him that things be organized and clean. He really does **not** like things to be a mess.	5	4	3	2	1	0
22. He thinks it's important to be interested in things. He likes to be curious and to try to understand all sorts of things.	5	4	3	2	1	0
23. He believes all the worlds' people should live in harmony. Promoting peace among all groups in the world is important to him.	5	4	3	2	1	0
24. He thinks it is important to be ambitious. He wants to show how capable he is.	5	4	3	2	1	0
25. He thinks it is best to do things in traditional ways. It is important to him to keep up the customs he has learned.	5	4	3	2	1	0
26. Enjoying life's pleasures is important to him. He likes to 'spoil' himself.	5	4	3	2	1	0
27. It is important to him to respond to the needs of others. He tries to support those he knows.	5	4	3	2	1	0

	HOW MUCH LIKE YOU IS THIS PERSON?					
	Very much like me	**like me**	**some what like me**	**a little like me**	**not like me**	**not like me at all**
28. He believes he should always show respect to his parents and to older people. It is important to him to be obedient.	5	4	3	2	1	0
29. He wants everyone to be treated justly, even people he doesn't know. It is important to him to protect the weak in society.	5	4	3	2	1	0
30. He likes surprises. It is important to him to have an exciting life.	5	4	3	2	1	0
31. He tries hard to avoid getting sick. Staying healthy is very important to him.	5	4	3	2	1	0
32. Getting ahead in life is important to him. He strives to do better than others.	5	4	3	2	1	0
33. Forgiving people who have hurt him is important to him. He tries to see what is good in them and not to hold a grudge.	5	4	3	2	1	0
34. It is important to him to be independent. He likes to rely on himself.	5	4	3	2	1	0
35. Having a stable government is important to him. He is concerned that the social order be protected.	5	4	3	2	1	0
36. It is important to him to be polite to other people all the time. He tries never to disturb or irritate others.	5	4	3	2	1	0
37. He really wants to enjoy life. Having a good time is very important to him.	5	4	3	2	1	0
38. It is important to him to be humble and modest. He tries not to draw attention to himself.	5	4	3	2	1	0
39. He always wants to be the one who makes the decisions. He likes to be the leader.	5	4	3	2	1	0
40. It is important to him to adapt to nature and to fit into it. He believes that people should not change nature.	5	4	3	2	1	0

Thank you for your cooperation!

Appendix 3.3.3 Values Workshop Information; Workshop Plan & Typical Workshop photo

Values Workshop Plan

1. PVQIV [15 mins. 10:00-10:15]

1.1. What we are looking to do today is, together, to develop a **Values Framework** of factors that you, both individually and collectively, consider *worthwhile, meaningful, or valuable,* to *you, your company, and its' future*; basically 'who you are' or 'what you are all about', what guides you as a business.

- This will be captured in terms of : 1) statements that represent **Value Indicators** like, *"...everyone has fair amounts of opportunity to express their own opinions..."*, and
  2) **Value Keywords or Value Themes**, which are like *category headings* for groups of statements, such as "*empowerment*" or "*freedom of self-expression*" or "*ambition*".
- From these Themes and their Indicators, you can begin to *direct and gauge your future progress* and *identify the success of your endeavours* by using the Indicators to gauge whether the things you are doing are aligned with your values.

1.2. So, whilst we are finishing our cakes and pastries, with this form I would like to capture some information about the things that are *valuable generally in your professional life*.

2. EL1: ELICITED VALUES STATEMENTS [30 MINS. 10:15-10:45]

2.1. I'd like you to start by thinking of a *specific project, a project outcome, an event, or professional activity* that was particularly worthwhile, meaningful, or valuable to you, or resonates strongly.

2.2. In one sentence can you tell me:
1) what the project or event is, and in another sentence,
2) why it was particularly worthwhile, meaningful, or valuable to you...

- **For example**, one thing I find particularly worthwhile and meaningful about my experience on a particular project recently was: "*regularly learning new things from my colleagues during the process of producing design and construction information*."
- A statement or 'Indicator' that captures this could read like: "*We/People freely share our/their knowledge with each other in an open, collaborative atmosphere*." Or perhaps *"People feel comfortable to share knowledge and ask questions."*
- The first is an account of fact about a specific circumstance or perhaps a collection of outcomes, whereas the second is a statement that provides a much broader and generic indicator which: *'identifies the presence … of a condition, or a trend (Bing Dict., ND).'*
- Ok, what is your first one? What's your project/event? Why was that W, M, V? Do you see where we're going with this?

2.3. Now, with the YELLOW post-its… Write three things, in the form of **Indicator Statements**, that were particularly worthwhile, meaningful, or valuable to you about that project.

- If there was only one thing about that particular project, please think about another project or event/condition/trend and write what was particularly worthwhile, meaningful, or valuable to you about it.

2.4. Now we have the first set of rough Values Statements, or Value Indicators.

3. EL2: Triggered values statements [30 MINS. 10:45-11:15]

3.1. Next, please can you examine this list of statements, or what we call 'triggers', that were prepared in previous sessions in a slightly different context, to help you clarify what matters to you.

3.2. Now please **choose three** of them that are particularly important or worthwhile to you, and write them down on BLUE post-its. *Please feel free to* **reword** *it if you feel a particular statement needs to adjustment to better represent your thoughts, or* **reuse** *it if it sparks another idea.*

3.3. If you find it difficult, think of writing a *Memorandum of Association,* and focus on just those **core** statements or indicators that are **most** worthwhile, meaningful and valuable.

4. CLUSTERING: Developing a 'values framework' [20 MINS. 11:15-11:35]

4.1. Now can you look through all your indicator statements and see if any of them appear to be in a *similar area*, have *similar themes* or seem to fall under the *same category*.

4.2. What I'd like you to do is to group or "**Cluster**" them together by **VALUE T**heme

4.3. Now we need to **identify a closely related 'value keyword'** or 'value category' that summarise each grouping, and write that Theme/Keyword on the **BLUE Post-it in BOLD CAPS**.

4.1. For example, here are three Indicator Statements:
"People have a sense of power they can affect change,"
"People create opportunities that benefit the wider community of life" and
"The messages of the organisation / project inspire people to take relevant actions in their personal lives"
…might all be clustered under the **Value Theme** of "*Change for the Better*".

4.2. Add to or change any existing statements; create any new or missing statements; Reflect; repeat

4.3. Now let's quickly photograph each.

5. BULL'S-EYE DIAGRAM PRIORITISING [20 MINS. 11:35-11:55]

5.1. Examining and clarifying the ranges of importance

5.2. Now we're going to consider what is worthwhile, meaningful and valuable to your company and its' future.

5.3. Reflect on the Value Keywords/Themes (and their meanings), and consider why they are important to you and your company.

5.4. With this in mind: can you discuss and agree which Value Keywords/Themes/Categories are *'critically important/worthwhile'* to you and your company, and place them in the CENTRE RING, then MIDDLE RING for *'important/worthwhile'*, and a Number 3 for *'least important'*.

5.5. Let's look at why the CENTRE RING is most meaningful to you/r company. What is most significant about this collection of statements? What stands out as important? What stands out as not important?

5.6. Reflect on this, and amend your placements and statements as necessary.

6. FUTURE SURVEY: Influences and Ranking [5 MINS. 11:55-12:00]

6.1. We now have a series of statements that reflect factors you consider important to you and your company. With this, I am going to draw up a framework and, in addition to sending it to you, I need to ask for one more thing. I will also send you a link to a survey in which we will focus in on a particular aspect of your practice: the influence of your values on particular aspects of your communication and decision-making.

6.2. In the meantime, I would like to ask you to:

- Think about how you communicate with decision-makers,
- Then, think about how you describe, explain and communicate matters of sustainability to them—or framing of sustainability,
- Then, think about what sort of things influence you in those processes.

6.3. Next week I'll send you an email with the survey and framework.

6.4. Thank you very much!

Appendix 3.3.4 Values Workshop Information; WeValue Indicators booklet

See following pages.

SOME IDEAS FROM OTHER PEOPLE

about things that are important to them in their projects or organisations

(and that you can evidence...)

Some ideas may be more relevant to your context than others, and sometimes the language might not be quite right for you—we would expect that. But these ideas might also make you think of new things...

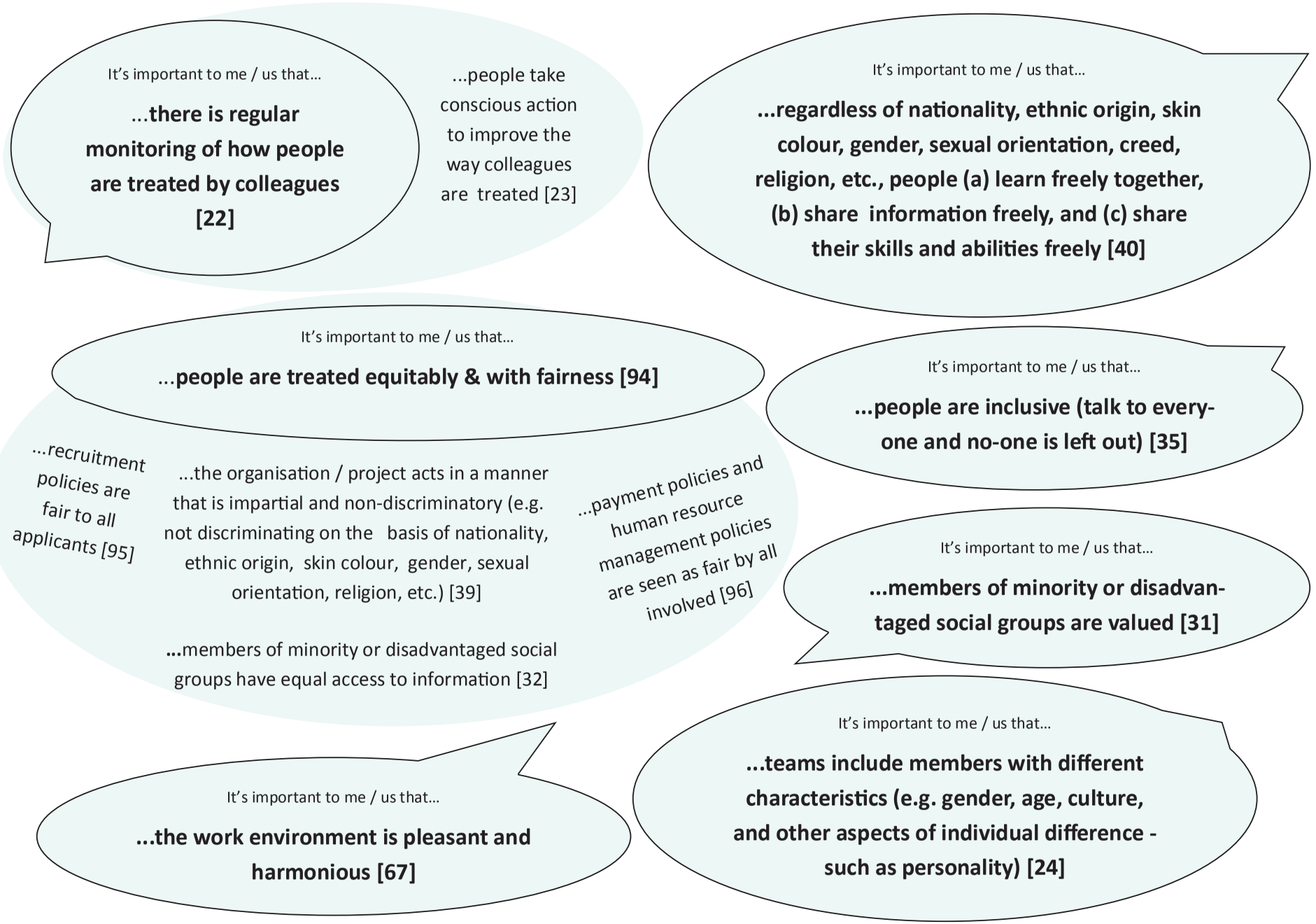
The purpose of this booklet is to **help you clarify things that matter to you**, which you might not have articulated in such detail.

WE VALUE.ORG

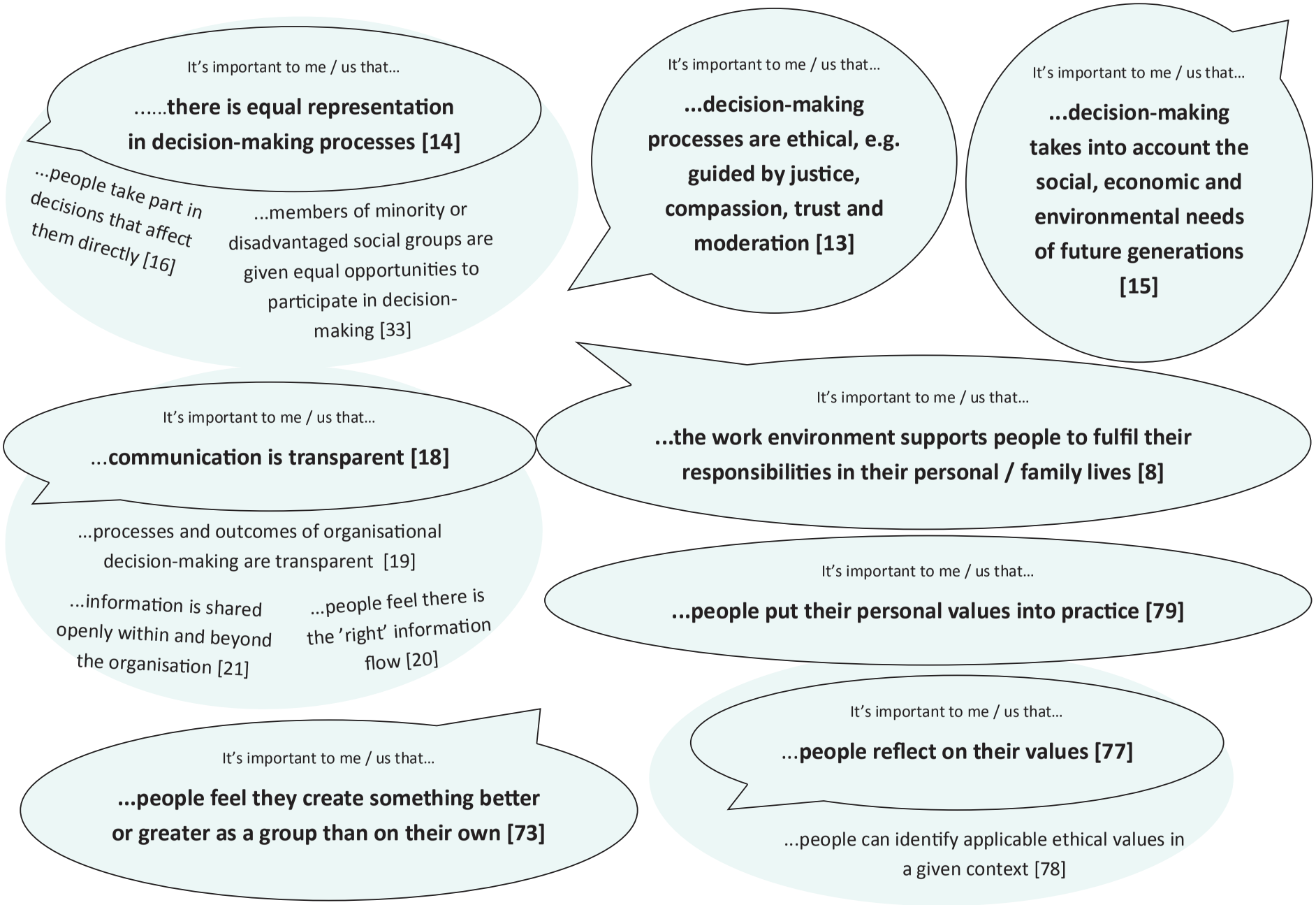

It's important to me / us that...
...everyone feels responsibility for their part of the work [3]
...everyone has their place in the team / group [1]
...people are encouraged and supported to fulfil their responsibilities[6]
...everyone knows the broader goal(s) of their work, and of the whole project or organisation [4]
...everyone knows what their responsibilities are within the team / group [2]
...people participate actively in helping the project or organisation to reach its goal(s) [5]
It's important to me / us that...
people are given flexibility to do things, within agreed boundaries [27]
...people are given autonomy and trust to fulfil their responsibilities [7]
It's important to me / us that...
people meet their commitments [9]
...when people collectively agree to act in a certain way, this is put into practice [75]
...people are trusted to meet their commitments [10]
...people trust their partners to meet their commitments, without the need for formal agreements [11]
...people trust that others share a commitment and willingness to work together for a common vision [90]
...goals are reviewed between committed parties, to determine what has and has not been achieved [12]
It's important to me / us that...
...people are not afraid to make mistakes [65]
...mistakes are understood as opportunities to learn and improve [66]
It's important to me / us that...
...the organisation's culture encourages learning from experience [62]
It's important to me / us that...
...information about the achievement of performance goals is communicated within and beyond the organisation [101]

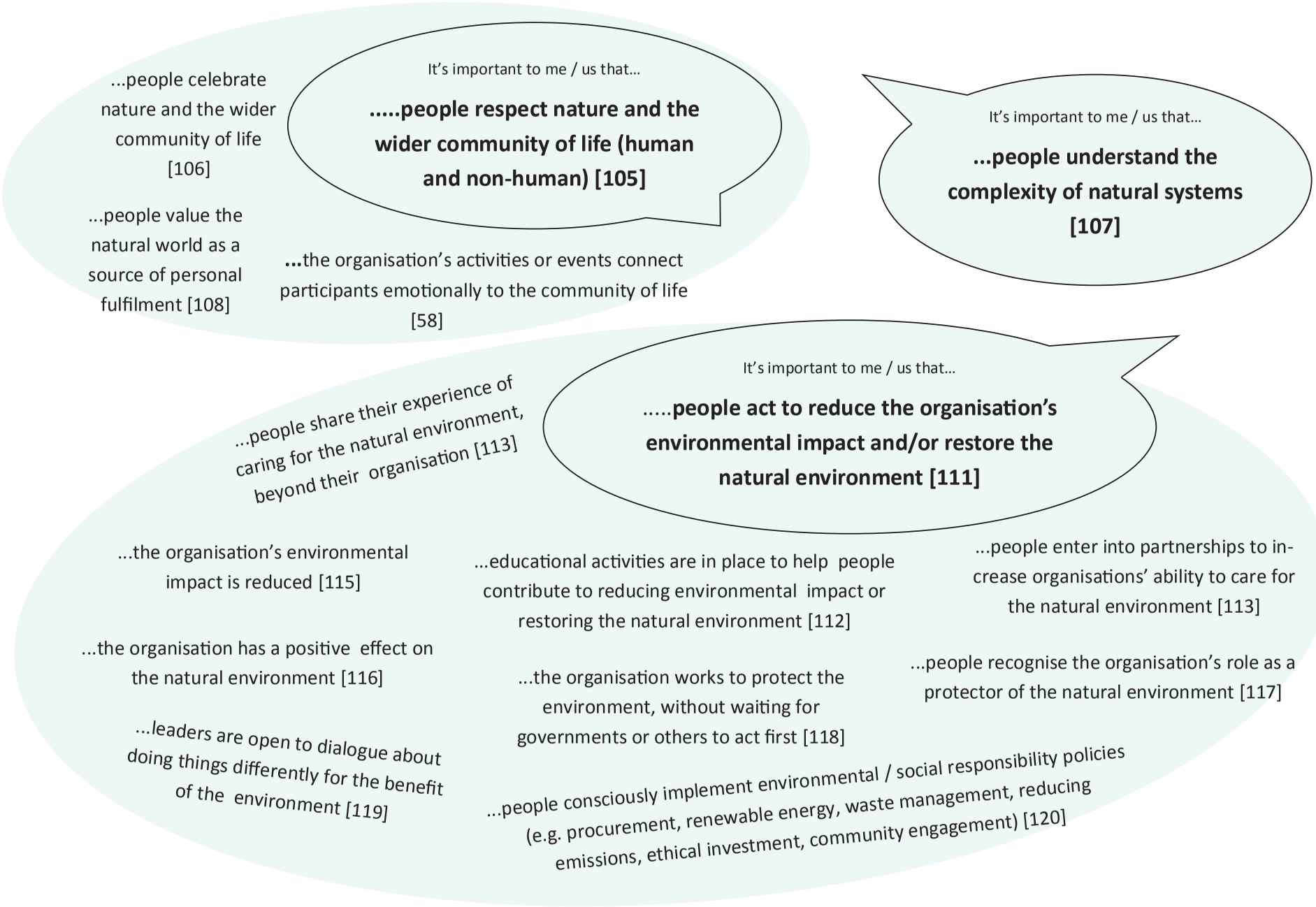

It's important to me / us that...
...individuals express their own opinions [46]
...people are encouraged to express their opinions [48]
...everyone has an equal opportunity to express their own opinions [47]
...people investigate what is 'right' and 'good' by themselves, rather than merely adopting other people's opinions [56]
...people explore their own ideas and reflect on their own individuality [53]
It's important to me / us that...
...people develop projects and solve problems on their own initiative [55]
...people contribute their existing wisdoms, skills, networks, resources and/or traditions towards the project / organisation [51]
...people develop their own visions and goals for the project or organisation [54]
It's important to me / us that...
...people's opinions are respected [49]
...people feel that everyone's opinions are respected [49A]
...people feel that their own opinions are respected [49B]
...people feel that their own individual identity is respected [29]
...the organisation respects and acknowledges the contributions of others to its work, and gives credit for the outcomes to those who contributed [52]
It's important to me / us that...
...people feel they are provided with opportunities for personal growth [61]
...people are encouraged to reach their potential [59]
...people's personal needs for development in the workplace are met [60]
It's important to me / us that...
...different approaches are valued [26]
...different points of view are heard and considered in the development of policies, strategies, projects, etc. [25]
...learning processes accommodate different learning styles [28]
It's important to me / us that...
...people feel their worth is acknowledged [30]


It's important to me / us that...
people's behaviour is consistent with their words [76]
...leaders live their principles [81]
...people feel inspired by the way(s) that leaders live their principles [82]
It's important to me / us that...
...people reflect critically on what is necessary to learn [64]
...people approach their personal development with an attitude of learning [63]
It's important to me / us that...
...people can access guidance on the application of ethics [98]
...people can access confidential, non-judgemental and unbiased mechanisms for reporting and examining violations of ethics [99]
...people trust the mechanisms in place for reporting and examining violations of ethics [100]
...people participate actively in developing the organisation's code of ethics, and procedures to deal with unethical conduct [17]
It's important to me / us that...
...people have self-respect [34]
It's important to me / us that...
...people have a sense of power that they can effect change [88]
...people have replicated a project or approach in other contexts [85]
...the organisation empowers people to contribute actively to sustainable development [87]
...the messages of the organisation / project inspire people to take relevant actions in their personal lives [83A]
...the messages of the organisation or project inspire people to start their own initiatives [84]
It's important to me / us that...
...the organisation's activities or events have a motivating effect on participants [57]
...people are motivated and productive in their work [92]
It's important to me / us that...
...people feel that creativity is valued [93]


It's important to me / us that...
...there is regular monitoring of how people are treated by colleagues [22]
...people take conscious action to improve the way colleagues are treated [23]
It's important to me / us that...
...regardless of nationality, ethnic origin, skin colour, gender, sexual orientation, creed, religion, etc., people (a) learn freely together, (b) share information freely, and (c) share their skills and abilities freely [40]
It's important to me / us that...
...people are treated equitably & with fairness [94]
...recruitment policies are fair to all applicants [95]
...the organisation / project acts in a manner that is impartial and non-discriminatory (e.g. not discriminating on the basis of nationality, ethnic origin, skin colour, gender, sexual orientation, religion, etc.) [39]
...payment policies and human resource management policies are seen as fair by all involved [96]
...members of minority or disadvantaged social groups have equal access to information [32]
It's important to me / us that...
...people are inclusive (talk to every-one and no-one is left out) [35]
It's important to me / us that...
...members of minority or disadvan-taged social groups are valued [31]
It's important to me / us that...
...the work environment is pleasant and harmonious [67]
It's important to me / us that...
...teams include members with different characteristics (e.g. gender, age, culture, and other aspects of individual difference - such as personality) [24]

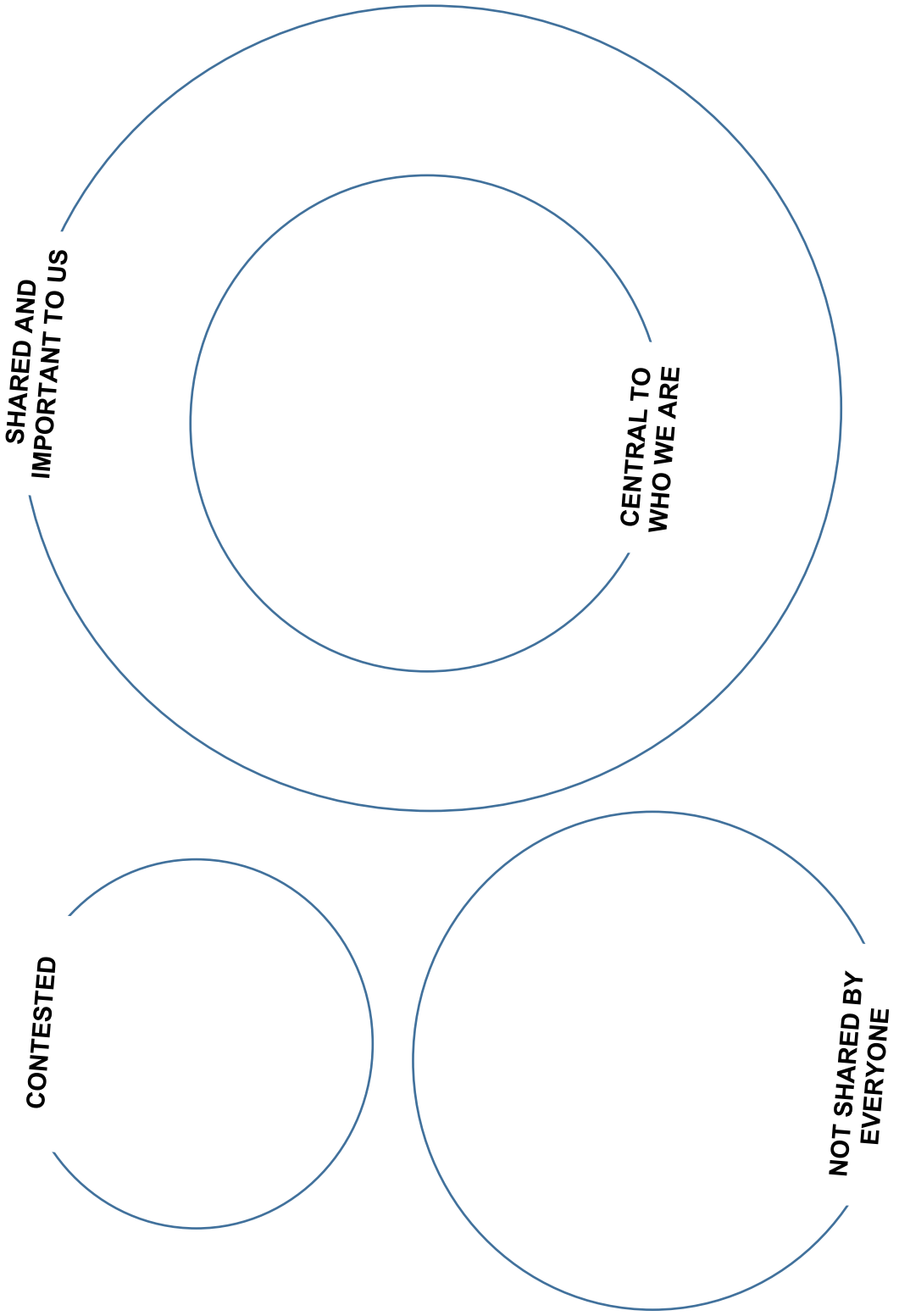

It's important to me / us that...
...people respect the differences in others [36]
...people appreciate the differences in others [37]
...people find ways to understand the differences in others [38]
It's important to me / us that...
...people have the opportunity to draw on the wisdoms, traditions and values that they hold, rather than having something imposed upon them [50]
It's important to me / us that...
...people treat each other with kindness [69]
...people speak courteously to each other [70]
...people introduce ideas to others with respect, humility and patience [71]
...people do not talk negatively about others in their absence [72]
It's important to me / us that...
...open dialogue exists between project partners [43]
...conflicts are resolved through dialogue [42]
...differences of opinion are acknowledged and valued through dialogue [41]
It's important to me / us that...
...people are perceived to be respectful in their interactions with others [68]
...people are perceived to be transparent [68A]
...people are perceived to be trustworthy and honest [68B]
It's important to me / us that...
...conflict resolution leads to learning and growth [45]
It's important to me / us that...
...people are able to suspend their own standpoints during dialogue and listen to those of others[44]


It's important to me / us that...
.....there is equal representation in decision-making processes [14]
...people take part in decisions that affect them directly [16]
...members of minority or disadvantaged social groups are given equal opportunities to participate in decision-making [33]
It's important to me / us that...
...decision-making processes are ethical, e.g. guided by justice, compassion, trust and moderation [13]
It's important to me / us that...
...decision-making takes into account the social, economic and environmental needs of future generations [15]
It's important to me / us that...
...communication is transparent [18]
...processes and outcomes of organisational decision-making are transparent [19]
...information is shared openly within and beyond the organisation [21]
...people feel there is the 'right' information flow [20]
It's important to me / us that...
...the work environment supports people to fulfil their responsibilities in their personal / family lives [8]
It's important to me / us that...
...people put their personal values into practice [79]
It's important to me / us that...
...people reflect on their values [77]
...people can identify applicable ethical values in a given context [78]
It's important to me / us that...
...people feel they create something better or greater as a group than on their own [73]


It's important to me / us that...
.....people respect nature and the wider community of life (human and non-human) [105]
...people celebrate nature and the wider community of life [106]
...people value the natural world as a source of personal fulfilment [108]
...the organisation's activities or events connect participants emotionally to the community of life [58]
It's important to me / us that...
...people understand the complexity of natural systems [107]
It's important to me / us that...
.....people act to reduce the organisation's environmental impact and/or restore the natural environment [111]
...people share their experience of caring for the natural environment, beyond their organisation [113]
...the organisation's environmental impact is reduced [115]
...the organisation has a positive effect on the natural environment [116]
...leaders are open to dialogue about doing things differently for the benefit of the environment [119]
...educational activities are in place to help people contribute to reducing environmental impact or restoring the natural environment [112]
...the organisation works to protect the environment, without waiting for governments or others to act first [118]
...people consciously implement environmental / social responsibility policies (e.g. procurement, renewable energy, waste management, reducing emissions, ethical investment, community engagement) [120]
...people enter into partnerships to increase organisations' ability to care for the natural environment [113]
...people recognise the organisation's role as a protector of the natural environment [117]

Appendix 3.3.5 Values Workshop Information; Prioritising values exercise

WeValue: Prioritising Our Values
(A0 concentric circles diagram for post-its)



Appendix 3.3.6 Interview Questions; Phase 2

Conversation Questions

WHAT. Any particular design proposal will encapsulate several layers of influence and decision processes that pertain to the future sustainability of the built project. We are investigating the influences in these processes.

WHEN. We are primarily concerned with two phases of the project lifecycle in particular:

- the very first initial interactions, and then
- during early design stages of inquiry, briefing, feasibility and/or initial proposals.

In our discussions if you recall a ***specific*** instance please mention it is specific, or if it represents much more widespread or general occurrences, please mention it is ***in general***.

WHOM. It is important to identify and then concentrate on "key decision-makers", whomever they are—your clients, stakeholders, local authorities, project team members, statutory consultees, members of the public, etc.

Now I'm going to ask some very basic questions, about very basic, fundamental processes. Because they're so basic and fundamental the answers may seem simple and obvious to you; or they might be a little difficult to articulate at first—we can work through those.

AP

First some questions from a broad or more general perspective, using several pre-prepared lists of "thought-triggers" as starting-points.

1. Using this first list, can you tell me a little about your own *background* and *professional experience* please? **
2. With this second list, please can you identify the sectors of your company's *current and previous projects*?
3. From this third list, can you identify your / company *approach to, or philosophy of* architecture / construction?
4. Using this list, what would you say is *most important to **you** professionally* in practice?

Now, some general questions about sustainability.

5. With this next list, can you identify your/company *approach to designing for sustainability*?
6. Here is a list of some example terms to describe sustainable design. What do you mean when you use the **phrase** "*sustainable design*"? You can choose from this list and simply say any others you use frequently.
7. With this last list can you identify, what are the *objectives of sustainable design* as it's practiced in your company?

E+V

In this set of questions, I'd like you to begin thinking about how you interact with decision-makers on sustainable design issues.

1. In your experience, who typically are the *key decision-makers* responsible for project sustainability?
    - What about the main *people influencing* the decision processes?
    - How do you find this out? [Could you give some examples?]
2. *How do you *initially engage with* these key decision-makers about sustainability issues? Is there any difference between *clients, statutory authorities, other SHs…* [Some examples?]
3. *How do you *discuss, or describe sustainable design issues* to them?
    - What are some of the challenges or problems?
4. *How do you find out what is important/worthwhile/meaningful/valuable to them?
    - *How does this influence how you discuss sustainability with them?*
5. *How do you find out about their *approach to sustainability*, (or perhaps their interests in sustainable design, or particular sustainability measures)?
    - *How does this influence project design decisions / your design decisions?*

C+F

Now I'd like you to think about when you initially approach projects and design concepts;

1. What is your approach to: - *Initial inquiries*? Can you give a typical example?
    - *Briefing*? Example?
    - *Feasibility*? Example?

2. Here is a different list. When discussing projects and design concepts with others, *initially*; *what do you emphasise*? Does anything from this list trigger any thoughts?
3. How do you choose *what to emphasise*? Here is list of typical project issues that arise in decision processes.
    - What influences your choices of emphases?
    - Why are these things important to emphasise? Versus others?
    - How do you communicate the importance of these things?
4. From this next list. What **really** *affects people in discussing/deciding sustainability* issues; what are the *affective factors?*
5. What are your personal experiences with *"framing" sustainable design decisions* differently with different people (or explaining it in ways that are meaningful to them *individually*)?
    - Can you think of any *Advantages, Disadvantages*…?

DP DECISION PROCESSES

1. *How do you *convince decision-makers about* sustainable design? (i.e. what gets 'buy-in' and not just recognition of SD)?
2. *How are decisions made about sustainable design* in your projects? **
3. What are the most influential decisions made about sustainable design?
    - *When are they made? ***
      What Phase: During briefing, during design, during construction?
      What Means: Project reviews or meetings; phone calls; in emails; on drawings…
4. What are the main factors influencing these decisions? What really affects decisions?
5. How do you *secure commitment* to sustainability issues? Is it *related to how much people are convinced* by the benefits of sustainability?

Closing Question

What would it take to consistently secure recognition, commitment and delivery of highly sustainable buildings in the future?

Appendix 3.3.7 Refined Interview Questions; Phase 3

Conversation Questions

We are interested in how architects **discuss** sustainable design with your clients
and help them make decisions about it –– **what happens, what you talk about, and what is most significant**,
starting from the very first time you make contact with a client,
up until the point at which a firm decision is made to build a design.

[I] Background / BASELINE

[F-AR BASELINE]

First, some questions from a broad or more general perspective, using several pre-prepared lists of "thought-triggers" as starting-points.

1. From this first list, can you identify your ***approach*** *to* architecture? Which to choose?
2. With this next list, can you identify your ***approach*** *to designing for sustainability*?
3. Here is a list of some example terms used to ***describe sustainable design***. What do you mean when you use the phrase "sustainable design"? You can choose from this list and simply say any others you use frequently.
4. What would you say are the broad ***objectives*** *of sustainable design* in your projects? Why do you try to design sustainably?

[V-AR BASELINE]

In this research, we talk about *human values*, what is most worthwhile, meaningful and significant—or *valued*—to an individual. Values can also be described as **what REALLY matters to people, at the end of the day**. To give you an idea of what we mean, here are some types of values identified in earlier studies.

We would like to know what is **most** worthwhile, meaningful and significant to you at different stages.

5. Using this list, what would you say is *most worthwhile and meaningful to* ***you*** generally in practice.
6. What about during initial interactions with clients, and early briefing stages [for sustainable design].
7. How about when addressing conflicts & challenges in sustainable design.
8. Generally, at the point of decision-making for sustainable design.

[II] Project Initially, at Design Problem / Brief

Think of specific projects in which sustainability was a consideration—if you can think of more than one example, then please do elaborate. Here, I'd like to understand how sustainability was initially discussed and established in the project first as the initial design problem the client brought to you, and then the translation of that into a design brief.

Dpi [CL]

1. **F-CL-Dpi** First, a question about the **client introduction [process] in the first project.**
   Just to set the scene for me, **HOW** did the client approach you / the practice with their design problem? And what did they say they wanted [particularly in terms of sustainability]? What was emphasised?
   THOUGHT TRIGGERS from this list or just say any others that come to mind.

2. **V-CL-Dpi** How about the **client's values initially.**
   What do you think was most worthwhile, meaningful and significant—or *valued*—to the client in those initial interactions/at the briefing stage? **TRIGGERS**

3. **Vpr-Dpi** How did you determine that? How do you raise and discuss their **approach or interests**?

DB [AR]

4. **F-AR-DB** **Next is a question about your briefing/brief development conversations.**
   How did you **initially engage** the client with sustainability and sustainable design issues?
   IOW How was sustainability initially introduced into the first client conversation?
   How was it initially explained to the client? With what terms, or phrases?
   What was emphasised and why? IOW, how did you frame sustainability to the client?
   IOW, how did you initially 'sell' sustainability? **TRIGGERS**

5. **V-AR-DB** **What about your *values* in the briefing process.**
   What was most worthwhile, meaningful and significant—or *valued—to you as an individual* in those initial interactions around the briefing stage.

[IV] Project at Outcomes

Following from the project brief, I'd like to understand how sustainability progressed in that job—in terms of decisions and of sustainable design end results…

DM [AR-CL]

6. **F-AR-DM** How were the sustainable design problems explained to elicit a firm decision from the client?
   With what terms, or phrases? IOW, how was sustainability framed to the client?
   How did you get them to commit? **TRIGGERS**

7. **F-CL-DM**
   What were the client's **decisions** about sustainability?
   IOW, what did you agree to **proceed to build** in terms of sustainability?

   Were the actual built outcomes different in any way from the decisions?

8. **V-CL-DM** What do you think was most worthwhile, meaningful and significant—or valued—to the client in making those decisions and their ultimate outcomes?

9. **V-AR-DB** What about you; what was most worthwhile, meaningful and significant—or *valued—to you as an individual* in those interactions? **TRIGGERS**

[III] Project, at Challenges / Interventions

CC [AR]

10. **Fpr-CC** **Challenges, Conflicts, or Interventions in normal workflows pose interesting issues.**
    A. Earlier, you mentioned…[CONFLICT / CHALLENGE]… How did that play out?
    B. Can you tell me about any significant conflicts or challenges you faced in delivering the agreed sustainability agenda/brief? How did that play out? What happened?

11. **F-AR-CC** **How about the content of that conversation.**
    How sustainable design issues explained or framed [back to the client]? What terms or phrases?
    As what kind of problem was it framed? What was emphasised and why? **TRIGGERS**

12. **V-AR-CC** **What about your *values* during those challenges.**
    What was most worthwhile, meaningful and significant—or *valued*—to you in addressing that challenge? **TRIGGERS??**

13. **V-CL-CC** **What about the client's *values* during those challenge conversations?**
    What do you think was most worthwhile, meaningful and significant—or *valued*—to them in processing that challenge? How did you determine that?

Closing Question

What mattered most to you in the end? Did that affect how you talk about sustainability to subsequent clients?

Appendix 3.3.8 Interview Information; Thought Triggers

See pages below.

University of Brighton

Sustainable Design Decision-Making Processes

‘Thought Triggers’

Main Approach to Architecture

VF-BL1

1. Commercial
2. Design
3. Sustainability

Main Focus of your Approach

VF-BL2

1. Sector Led (i.e. Commercial; Healthcare; Education)
2. High-quality Design Led
3. Project Management Led
4. Service Led or User Led
5. Client Led
6. Partner / Director Led
7. Building Performance Led
8. Function Led
9. Social Impact Led
10. Method Led (i.e. PassivHaus, MMC, Timber frame)
11. Turnover Led (i.e. entertain all projects, depending on capacity)
12. Other, please specify

Your Approach to Designing for Sustainability

VF-BL3

- **Unacceptable to us** socially / politically;
  Banned from all conversation, etc.
- **Utterly Irrelevant to us** and totally ignored.
- **Mostly Irrelevant to us**, or
  Peripheral to our core business.
- **Unimportant to us**, unless client-specified.
- **Relevant to us**, but only as statutory requirements.
- **Fairly Relevant to us**, but only to achieve added financial value to the client's holdings.
- **Somewhat Important to us**, but implemented occasionally for various reasons and constraints.
- **Quite Important to us**, and regularly implemented whenever possible.
- **Very Important to us**, and we work hard with decision-makers to achieve it.
- **Vital to us**, central operating philosophy, nothing more important.

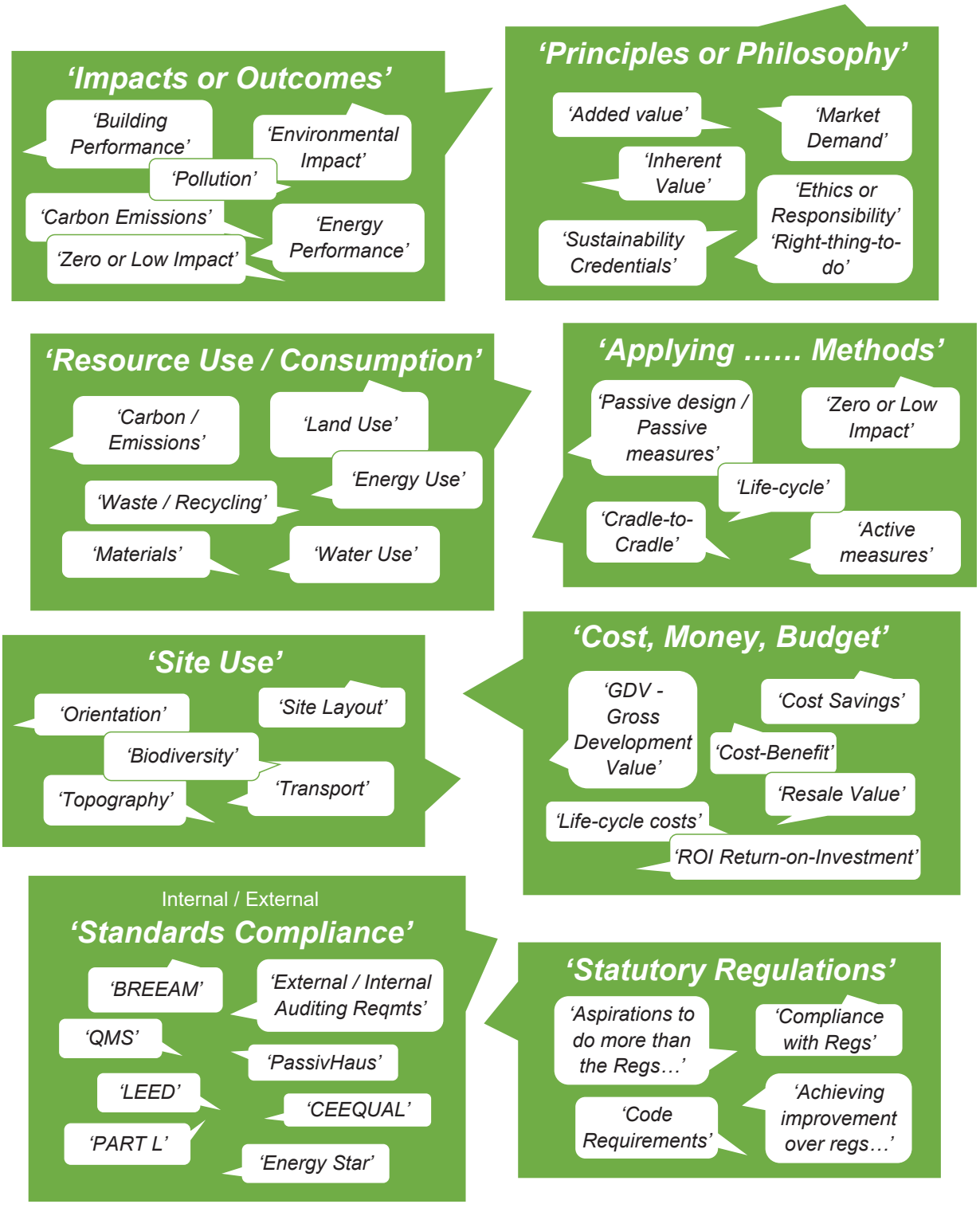
How do you usually Explain the Objectives of sustainable design to your clients? VF-BL4

1. Used to achieve some other objective
   (Stay in business; Attract more clients; Be more marketable;
   Look cool/on-trend; Other, please specify)
2. Jump a hurdle
3. Fulfil statutory obligations
4. Do (only) what's necessary
5. Add financial value to an asset or site
6. Do my bit
7. Be less bad
8. Save money for my clients
9. Make it last longer
10. Leave something for others
11. Reduce/minimise our impact; Low or minimum impact
12. Give something back (to society, to the environment, etc.)
13. Regenerate and sustain
14. Zero Impact, Zero Carbon, Zero Energy
15. Total Positive Impact

As what Type of Decision Problem do you mainly characterise "Sustainable Design"?

fBL5

"Mrs. Client, this decision is a matter of …… life or death?"



Professionally, <u>most</u> *worthwhile*, *meaningful*, *significant* to you? What do you enjoy most? [vBL]

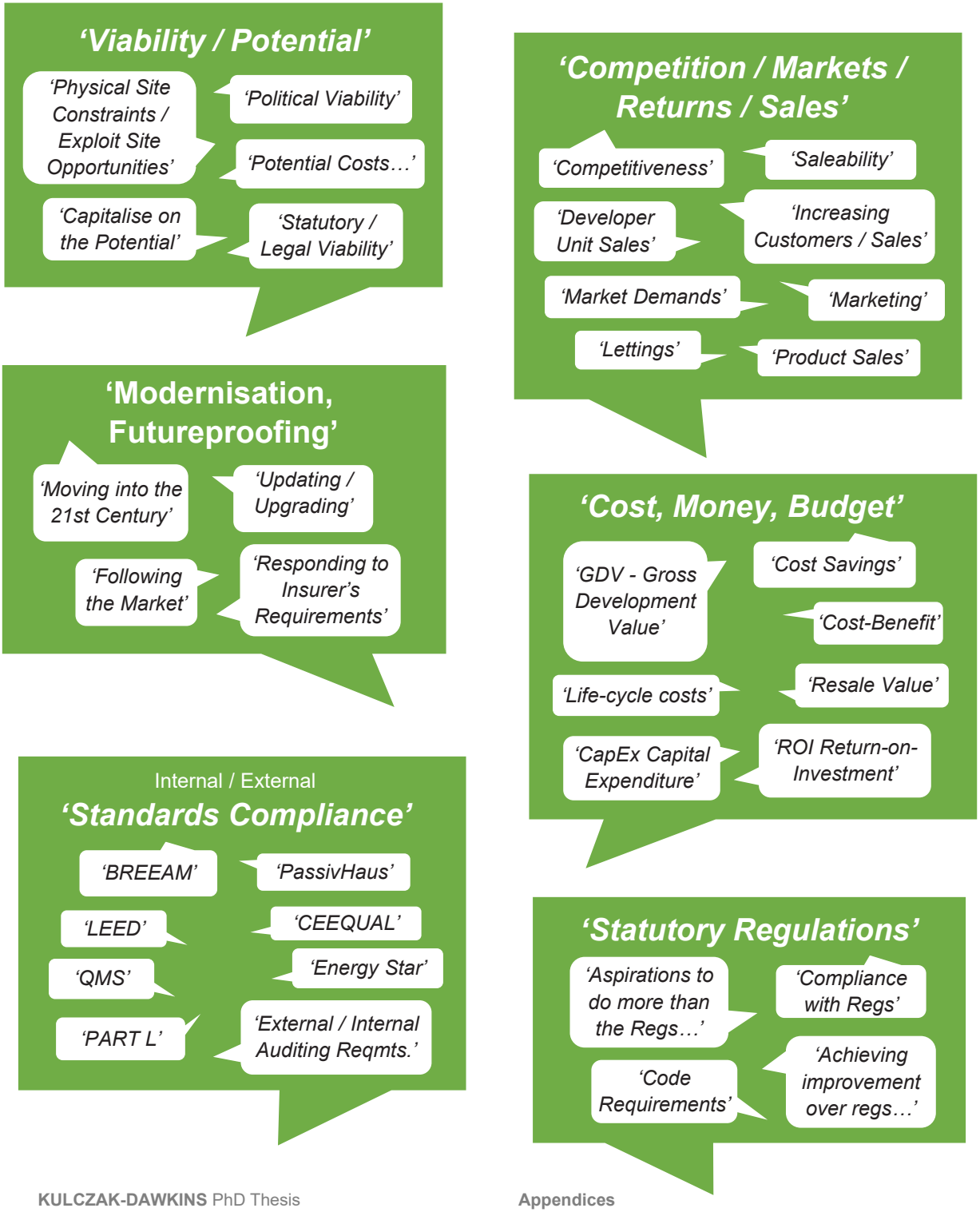
“What advice would you give to a grandchild aspiring architect?”

Most *worthwhile, meaningful, significant* to you?

What matters most? What do you enjoy most? [vBL]


Outcome/Impact-Focused
Serving the community
Making an impact on the world for the better
Producing buildings with little / no negative impact
Making a visible impact on ……
Serving society and greater good of humanity
Commercial competitiveness
Building sustainably, full stop.
Organisational Growth
Making a tangible / intangible impact on ……
Newspaper coverage
Building as sustainably as practicable
Publishing in magazines in books
Taking a …… approach
Energy Efficiency
Building safely
Creating positive environments for end-users
Designing aesthetically pleasing buildings
Mutual Communication
Deep Collaboration / Partnering
Cost efficiency / Value for Money
Mutual Understanding
Resolving differences / challenges
Collaboration
Full-spectrum decision-planning
Mutual Respect / Respectfulness
Communicating & meeting agreed standards
Strategic thinking regularly
Statutory compliance
Meeting / Keeping Commitments
Interacting & communicating with clients often
Maintaining a work / life balance
Design creativity
Designing …… type of projects
Project Management-focused

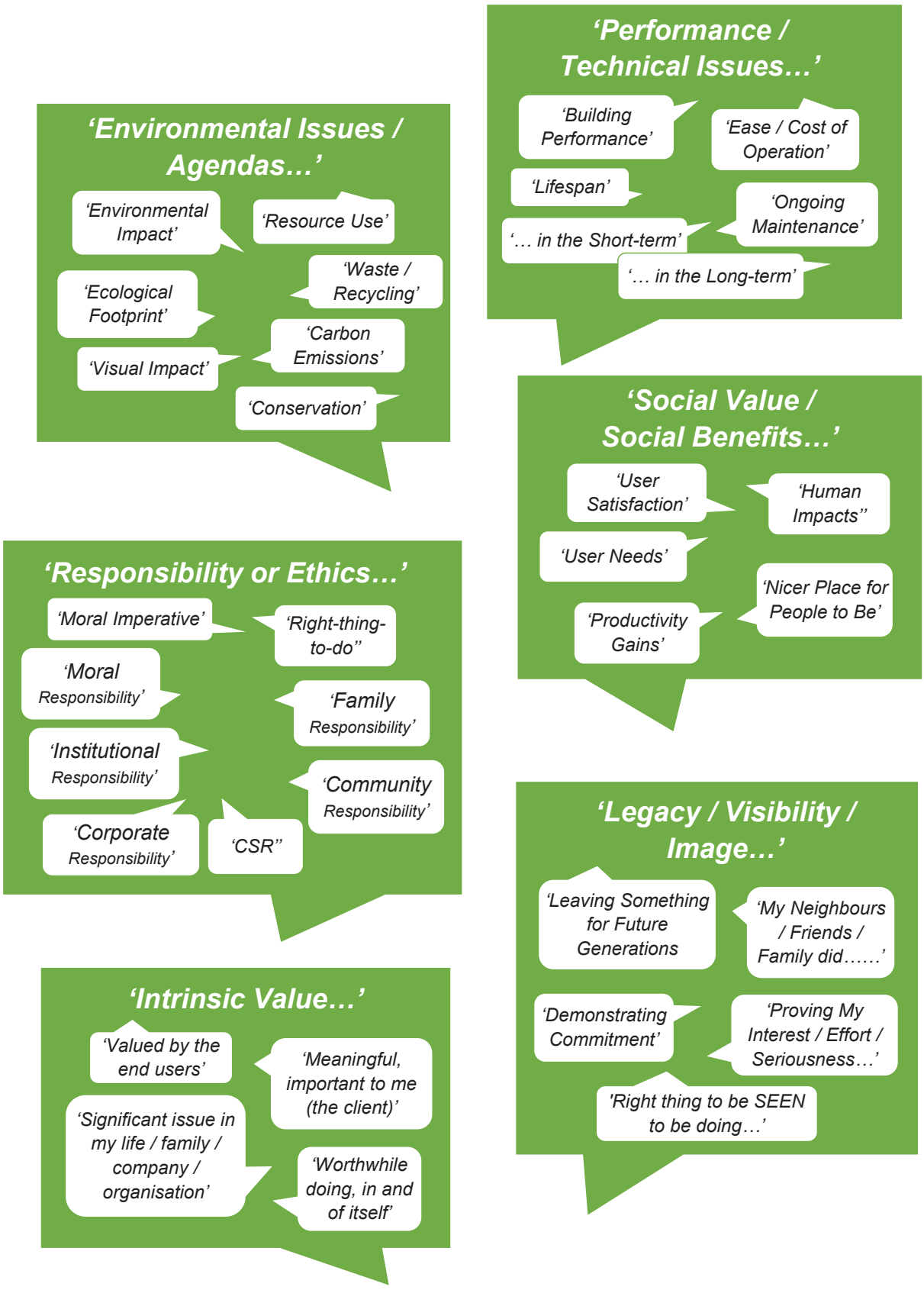
Tracking Project Sustainability Conversations
from
Initial Introduction to Formal Decision-making



Initial Explanations of Sustainability:

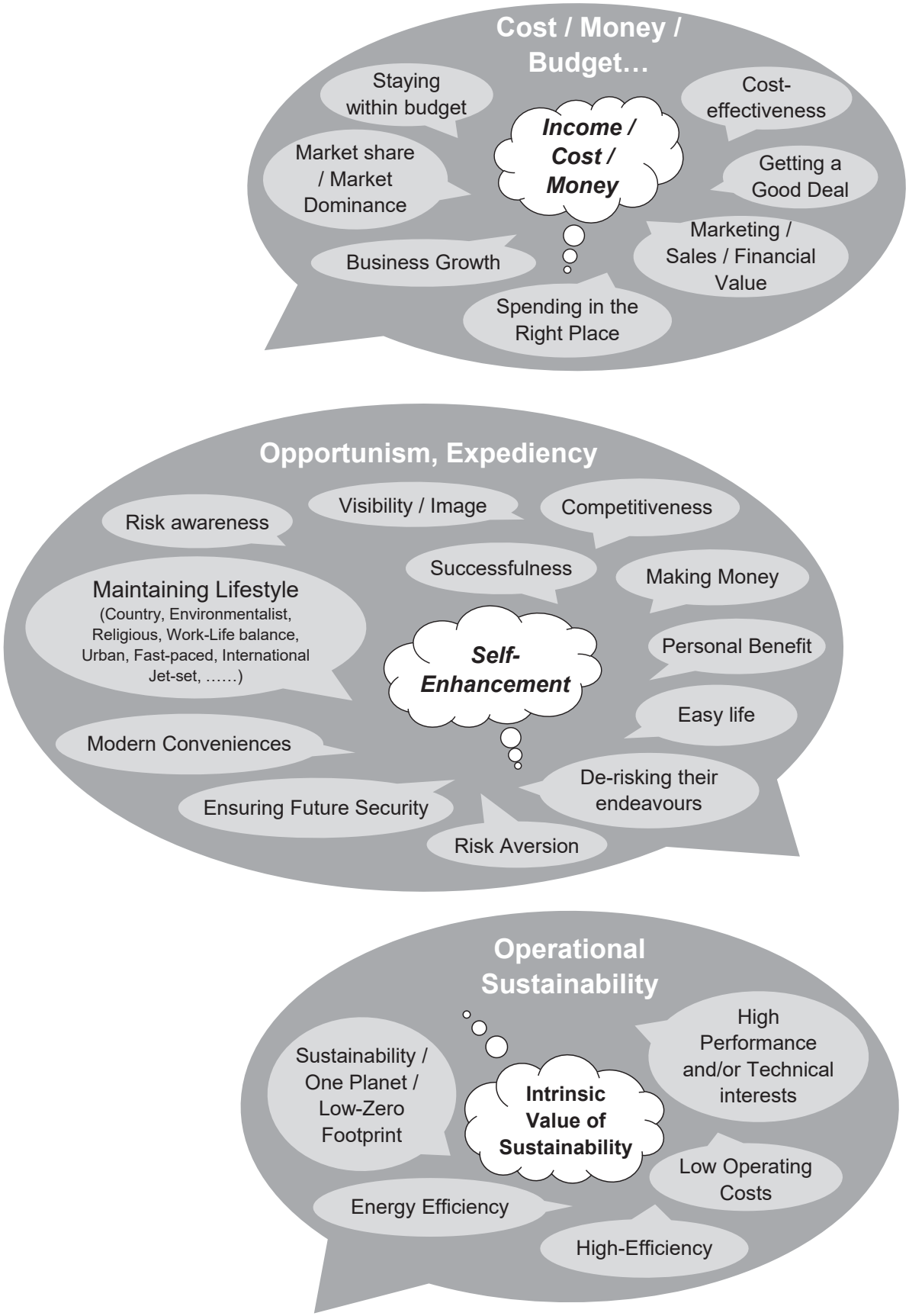
[F-AR/CL-DPi]

What was emphasised?



Initially to the client, what do you think was most worthwhile, meaningful, significant?

V-CL-DPi


Cost / Money / Budget…
Staying within budget
Cost-effectiveness
Income / Cost / Money
Market share / Market Dominance
Getting a Good Deal
Marketing / Sales / Financial Value
Business Growth
Spending in the Right Place
Opportunism, Expediency
Risk awareness
Visibility / Image
Competitiveness
Successfulness
Making Money
Maintaining Lifestyle
(Country, Environmentalist, Religious, Work-Life balance, Urban, Fast-paced, International Jet-set, ……)
Self-Enhancement
Personal Benefit
Easy life
Modern Conveniences
De-risking their endeavours
Ensuring Future Security
Risk Aversion
Operational Sustainability
High Performance and/or Technical interests
Sustainability / One Planet / Low-Zero Footprint
Intrinsic Value of Sustainability
Low Operating Costs
Energy Efficiency
High-Efficiency

Initially with that client and project what was <u>most</u> *worthwhile, meaningful, significant* to you?

What mattered most? What did you enjoy most about the conversation? [V-AR-DB]

[V-AR-DPi]

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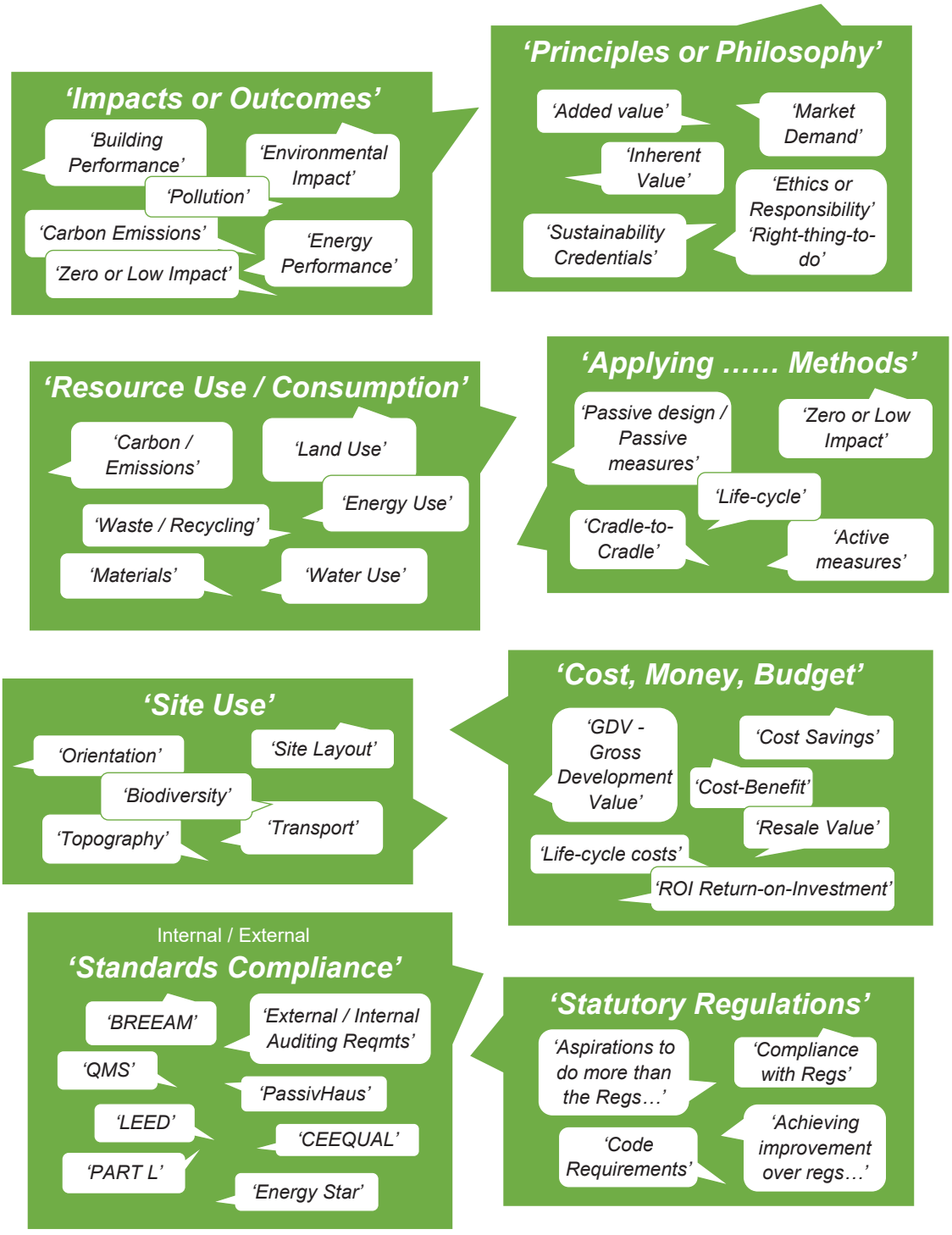
At the point of securing a decision on Sustainability: *What was emphasised to the client?*

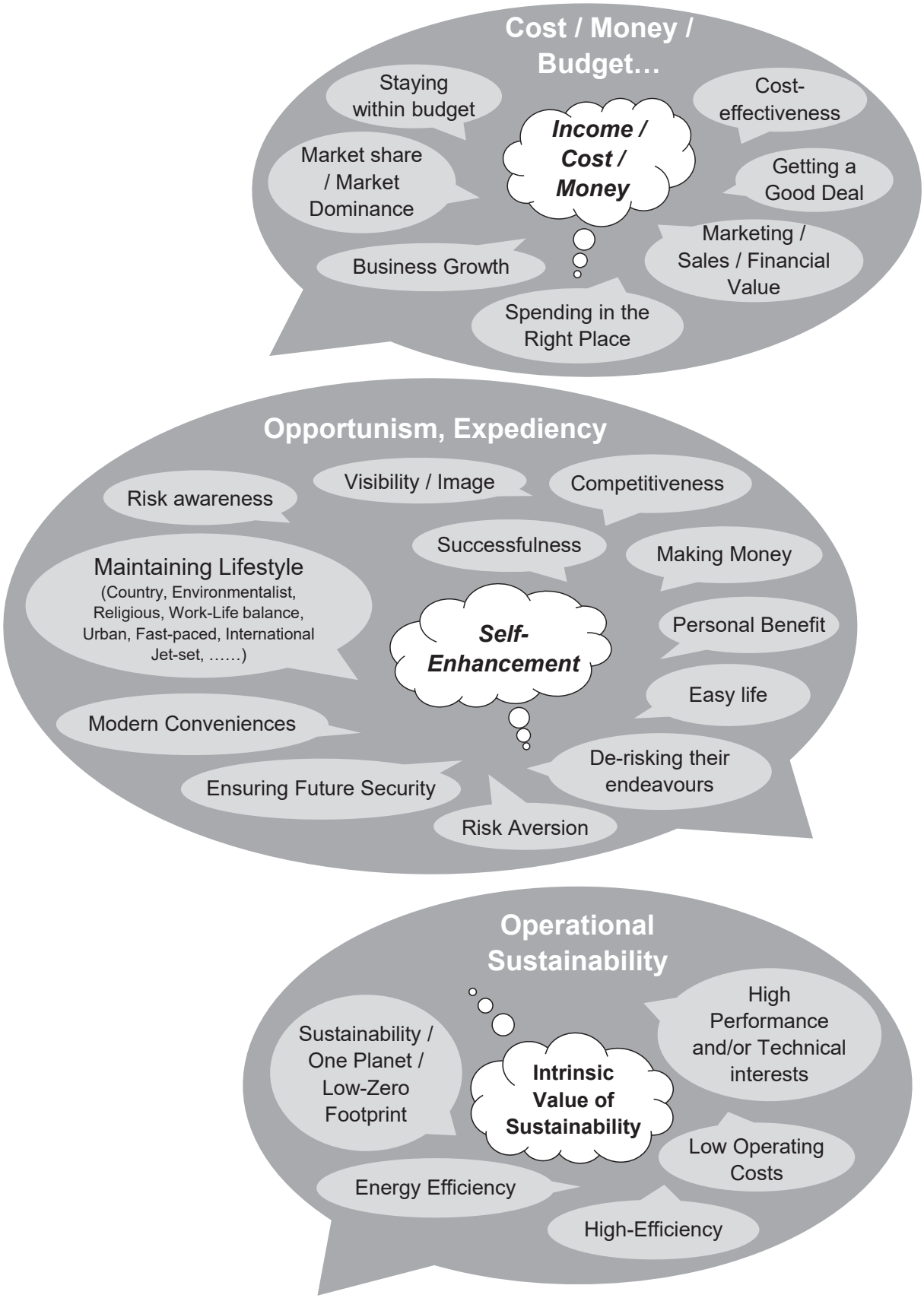
F-AR-DM



At the point of <u>securing a decision</u> on Sustainability with that client, <u>most</u> *worthwhile*, *meaningful*, and *significant* <u>to you</u>? *What mattered most?* V-AR-DM

[V-AR-DM]

At the point of <u>making a decision</u> on Sustainability, what do you think was <u>most</u> worthwhile, meaningful, significant <u>to the client</u>? *What mattered most?* V-CL-DM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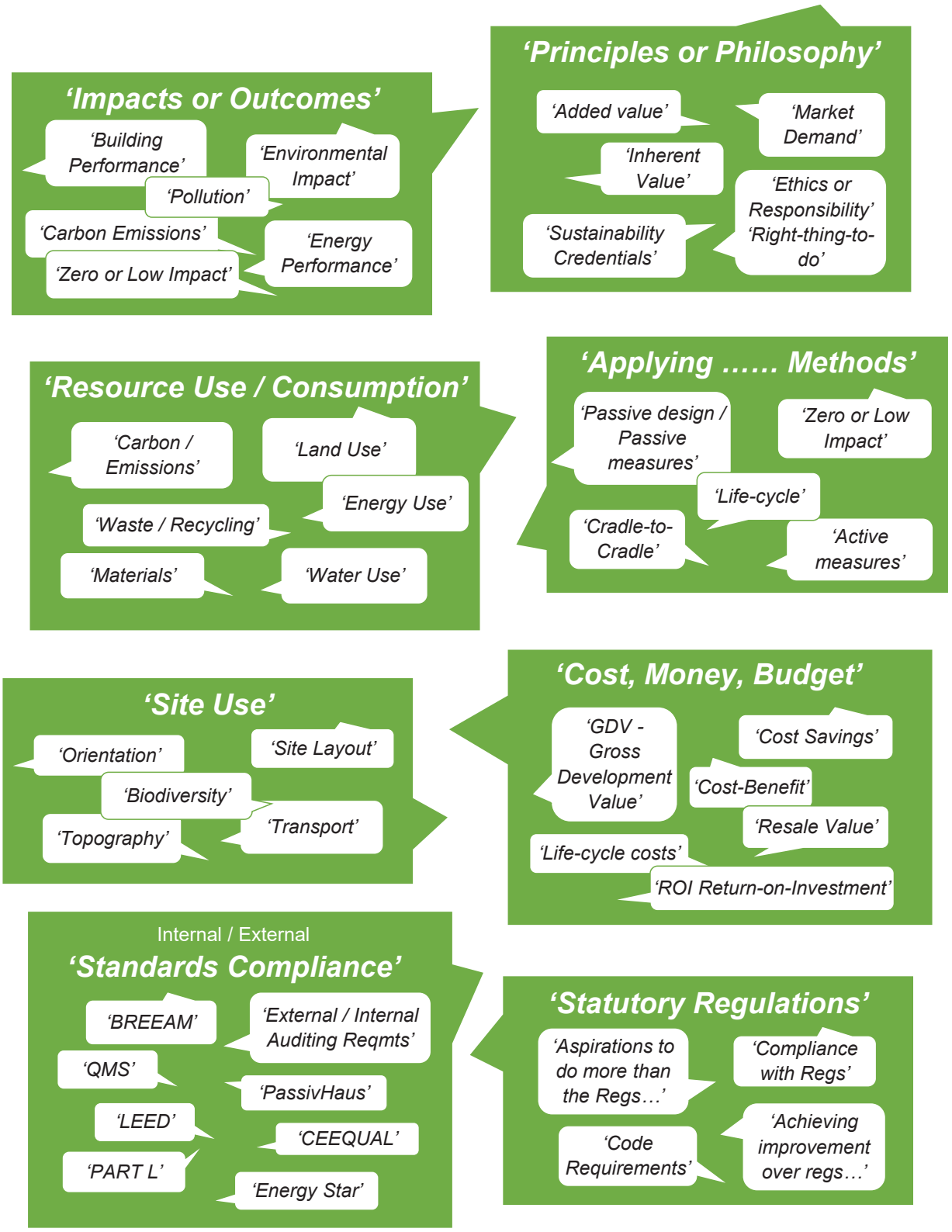
When discussing Challenge / Conflict / Change:
What was emphasised to the client?

F-AR-CC



When addressing Challenges / Conflicts in that project, <u>most</u> *worthwhile*, *meaningful*, and *significant* to you?

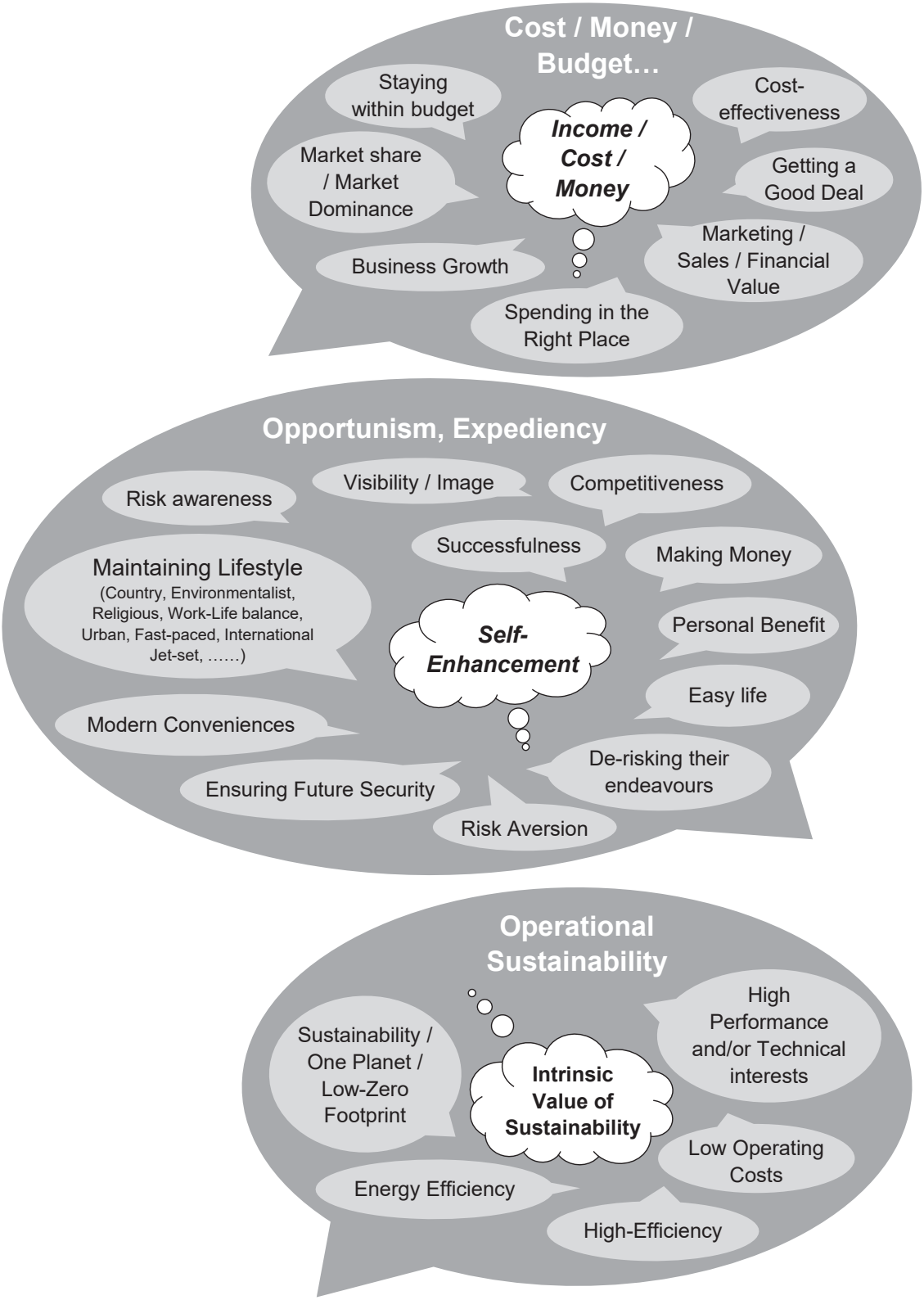
What mattered most? V-AR-CC

[V-AR-CC]

In dealing with Challenges / Conflicts, what do you think was <u>most</u> worthwhile, meaningful, significant <u>to the client</u>?

What mattered most?

V-CL-CC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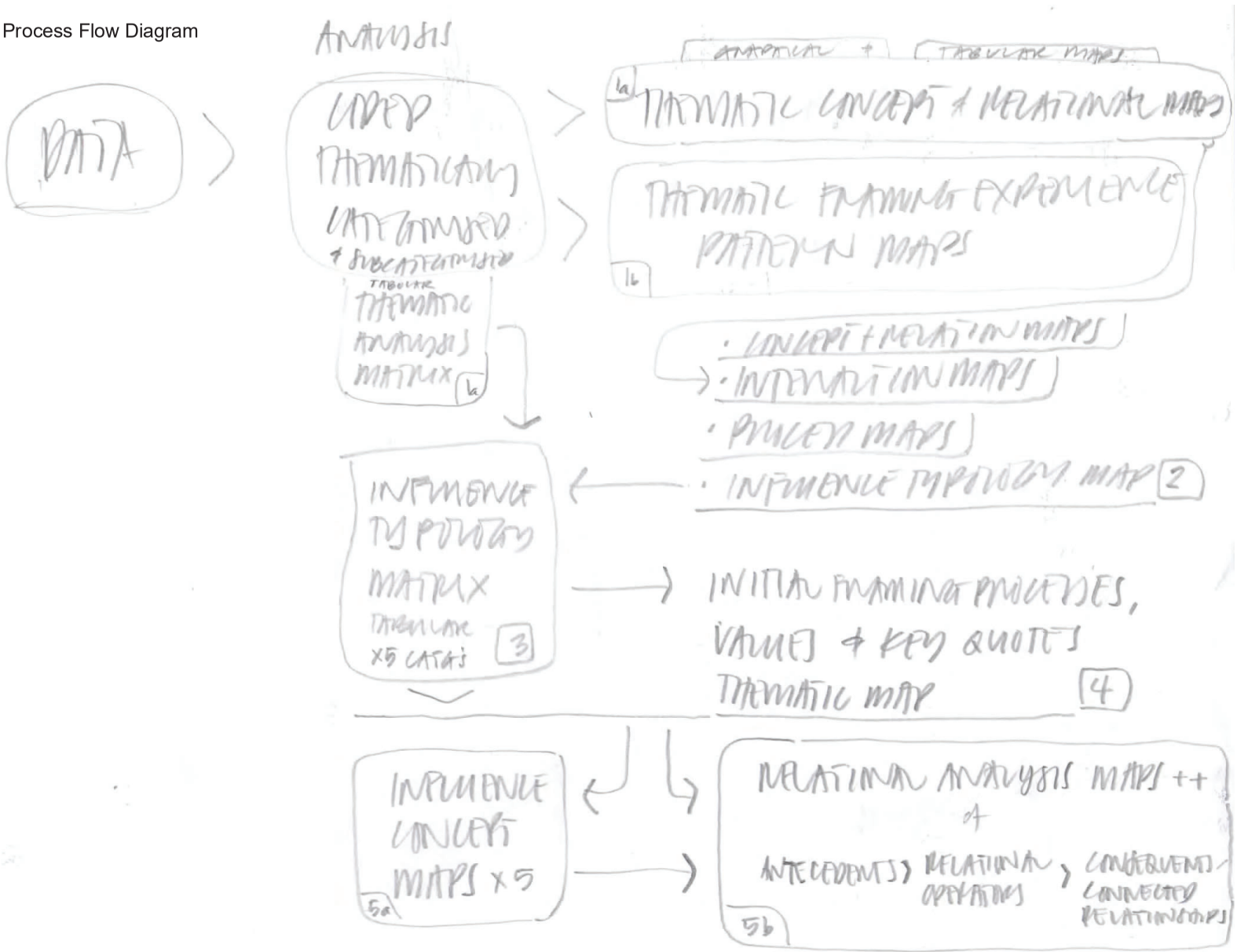
Appendix 4 Exploratory Studies' Appendices

Contents

Appendix 4.1 MA1 Preliminary Analysis Matrices and Selected Basic Concept Maps

Contents

0 Analysis Process Flow Diagram



1 Thematic Analysis Matrices

	#PF Influences	INF IN FB; INF OF PF	Underlying, underpinning, interacting, linking, overriding, overarching; ORIGIN - FOCUS - MOTIVATION - MEDIATED / MODERATED - ACCCESSIBLE / ADDRESSABLE / negotiable?	INFLUENCES OF VALUES? INFLUENCED BY VALUES?
Problem Frame influences were identified by key informant's responses to interview questions pertaining to their framing of sustainability to key stakeholders, how they interact with SHs and discuss sustainability with the aim of making design decisions, and what influences them in their choice of frames and terms of reference. This was important because identifying the typology of influences helped pinpoint a fundamental outline of influences and their types, when in the framing process they manifested, to what influences were related, specifically whether particular influences were as a result of values i.e. influences with values dimensions, what those dimensions were, and to what extent other influences 'trumped' or took precedence.	#PF INFLUENCES: judges and values technically significant efforts: Perhaps this means that PPT3 prioritises them differently, or the easy wins are not worthwhile, or they don't completely understand the holistic approach to sustainability (unlikely though)(CAS, NCD, RYMS)	INF IN FB: PPT influence on the PF, NEUTRAL-NEGATIVE impact; PPT evaluates, prioritises, and values sust. measures differently, acts on that basis; individual approach and individual differences	prior; UNDERLYING PPT bias; *Originating* in PPT approach/perspective; *Focused* on evaluations of technically significant efficiency measures; *Motivated* by incongruence with values of efficiency; *Mediated* by interpretation and evaluation; accessible and addressable; NEUTRAL/NEGATIVE	*PPTs VALUES of efficiency and associated technical significance mediate their interpretation and professional evaluations, judgements, and prioritisation of sust measures in their problem frames*
	#PF INFLUENCING/AFFECTIVE FACTORS: budget, financing, project vision, developing personal working relationships (general perspective)	INF IN FB: Money and people relationships–Key sustainability SUCCESS FACTORS	very early, throughout; UNDERPINNING, LINKING + INTERACTING; *Originating* in and *Mediated* by financial factors, and individual approaches and differences; *Focused* on and *Motivated* by project success, organisational success (i.e. fees); if 'developing personal working relationships' entails values engagement and values-oriented frames then POSITIVE, else NEUTRAL	*VALUES dimensions present and influencing interpersonal working relationships as MEDIATORS, or MODERATORS, which entails values engagement and subsequent/consequential values-oriented frames*
Frame influences with values dimensions/components were primarily clustered very early in the PF process but also appear to run throughout the decision-making process. In all but one of the instances of values and frames joint influences, the influences of values occured in the frame-building process. That values dimensions influence problem frames throughout the framing process is significant because it demonstrates that early arising values influences set the stage for future interactions. WHICH VALUES AND FRAMES COMBINATIONS?	#PF INFL.: Cost frame moderated by, and perhaps even trumped by, the NEW FRAME/VALUE OF COMMITMENT; evangelical client (VFS)	INF OF PF on early commitment; INF IN FB of that commitment; potentially POSITIVE impact	very early, throughout; UNDERPINNING, OVERRIDING; *Originating* in, *Motivated* and *Mediated* by values-based (evangelical) commitment; *Focused* on interpreting costs as hurdles vs. barriers.	*CLs VALUES-based commitment precipitates interpretations and subsequent problem frames of challenges such as cost which are informed by those underpinning values. The extent to which the values are held is evident in their capacity to facilitate OVERRIDING frames in the face of challenge.*
	#Frame INFLUENCE, frame VALUES/PRIORITIES: Commercial clients' needs demand commercial awareness, well-designed delivery (DCW, WFEG/WFES, RSJ/RSP, etc.)	INF IN FB: UNDERPINNING; commercial needs demand commercial awarenss and frames that speak to it; recognition of it is POSITIVE;	start early, run throughout; UNDERPINNING AND OVERRIDING; *Originating* in client type; *Focused* on and *Motivated* by satisfying clients (commercial) needs; *Mediated* by the circumstantial evaluation of what commercial awareness entails;	*VALUES and PRIORITIES manifest in architecture projects as NEEDS, precipitating circumstantial evaluations of their needs and the extent of "commercial awareness".*
The single influence of particular problem frames with values dimensions early in the process concerned the early commitment secured when when one particular client's values presupposed their concerns regarding costs. The approach to sustainability by this particular client was characterised by the Key Informant as 'evangelical' about sustainability. Framing sustainability in the process of securing early commitment with this client lasted throughout the decision-making process. As the KI recounted, "if you are so committed to sustainability no matter what else you do with your building, it will achieve everything you want out of it, you will make it happen somehow." This commitment appeared to moderate and trump even cost frames. In a sense, any positive sustainability frames would have been effective with this client, akin to what the KI said earlier as "pushing on an open door;" Interestingly, values dimensions also appeared in the early-middle of decision-making processes and were primarily the influences of problem frames with values dimensions in 66% of the coded data slices, or two out of three. Indeed all three were linked through the KI's particular frame	#PF PROCESS INFLUENCE: overcoming small private client PRECONCEIVED IDEALISM versus REALITY of sust costs (FHO, EAF, several small resi jobs)	INF IN FB: Costs of sustainability and overcoming idealistic preconceptions 'all on a shoestring' through PPT FB	start early, run throughout; UNDERPINNING AND OVERRIDING; *Originating* in client type; *Focused* on and *Motivated* by satisfying clients (commercial) needs; *Mediated* by the circumstantial evaluation of what commercial awareness entails; potentially accessible through dialogue	*SHs VALUES-based idealistic preconceptions interpreted by PPT as something to be overcome in relation to cost realities*
	#PF INFLUENCE; practitioner frame/influence; money (VFS, FHO, EAF, NCD, PRF, DBA, DRR, several small resi jobs)	INF IN FB: Money and financial frames regularly influential; value is placed on financial frames (?); NEGATIVE impact in that SUST is pitched against COST which prevails;	early, throughout; THROUGHGOING: UNDERPINNING, INTERACTING, LINKED, OVERRIDING; *Originating* in the nature of construction as a cost-bearing human endeavour; *Motivation* to employ cost frame varies according to numerous interacting factors including practition experience and skill in using other frames, client-type and experience, project type, and timing of the framing as to whether earlier or later in the design development and construction process when changes have cost implications.	*Relative VALUE placed on money and financial frames influences subsequent moves / reflections and consequential frames / re-framing (cf. Schön)*
	#PF influences: PPTs personal judgement (and personal valuation?) of sustainability measures (VTA...)	**INF IN FB: Personal judgement informed by reflective individual valuation of sustainability; FUNDAMENTALLY influences frame building, composition, selection, readjustment**	**early, throughout; THROUGHGOING: UNDERLYING, INTERACTING, LINKED;** *Originating* in and *Motivated* by reflective individual valuation; *focused* on the relative value placed on sustainability and its measures by the PPT; *Mediated* by individual differences and circumstances; Addressable and negotiable	*VALUES and associated personal judgements inform reflective individuals evaluation of sustainability; consequentially influences framing, as L165-Col.C*
Does it all come down to the value PPTs place on sustainability in relation to other driving and influencing values, and the value they perceive and interpret that others place on sustainability??	#PF INFLUENCE: larger clients "understand that good sustainable design is a benefit" (VTA, HEC, DCW, WFES, WFEG)	INF OF PF; INF IN FB; Client-type and size influence on the PF, positive; understanding the benefits, advantages	early, throughout; UNDERLYING, INTERACTING; *Originates* in client-type as a financially-orientated/driven entity and individual differences in perception and/or interpretation of sustainability/design; *Motivated* by the benefits accrued; *Mediated* by individual differences in perception/interpretation of sustainability/design; Addressable	is this a result of frames or an influence on frames?
UNDERPINNING drivers and influences are overt and visible, UNDERLYING are covert, subtle, almost invisible.	#PF Influences: BIM planned information models and their predictions, versus actual outcomes	INF IN FB: Choice to use BIM/information technology influences how design problems are framed and solved; unclear impact, based on the circumstances	early, throughout to post-occupation; INTERACTING, LINKING; *Originating* in technology choice; *Motivated* by technology capabilities and outputs; *Focused* on predictions versus actual outcomes; *Mediated* by project type, size, budget, timescale; *Addressable* and negotiable	*Selection of BIM and adoption of associated new ways of thinking potentially mediated by SHs/PPTs VALUES and associated evaluations*
	#Frame influence: adoption of BIM technology changes ways of thinking about sustainability in design and construction	INF IN FB: UNDERLYING; BIM technology 'way of thinking' influences SUST frames	early, throughout; UNDERLYING, INTERACTING; *Originating* in technology choice; *Motivated* by technology capabilities and outputs; *Focused* on 'new ways of thinking' about design and sustainability; *Mediated* by individual differences in use of BIM, approaching and thinking about and framing design problems; *Addressable* and negotiable through accessing thinking processes	
'my understanding/a euphemism for interpretation?	#Frame influence: sustainability requirements "understood" by the client re: other's supply chain entry; filters into project sustainability (VTA, ...)	INF IN FB: supply chain entry precipitates particular sust. frames	early, throughout; UNDERPINNING AND OVERRIDING/OVERARCHING, INTERACTING; *Originates* in the client's industry; *Focuses on, Motivated and Mediated* by client's contractual compliance with supply chain requirements; not addressable or negotiable	OVERriding/ARCHING in the sense that if we don't comply with these supply chain requirements we don't get the contract /
L.161-162 suggest the skill sophistication of this PPT in differentiating subtle refinements in their problem framing	#Frame influence: commercial client type: Larger commercial clients embrace sustainability because it gives competitive advantage to 'stand out' (VTA, HEC, DCW, WFES, WFEG)	INF IN FB: client type influences commercially competitive advantage-type problem frames (for the sophisticated, skilled communicator who can 'speak to' those frames)	early, throughout; UNDERPINNING AND OVERRIDING; *Originating* in client type; *Focused* on and *Motivated* by satisfying clients (commercial) needs; *Mediated* by the circumstantial evaluation of what commercial awareness entails;	*Concern for competitiveness potentially mediated by VALUES*
	#Frame influence; client type: Small commercial clients not disadvantaged by lack of sustainability (RSJ, RSP, VFS)	INF IN FB: client type influences commercially competitive advantage-type problem frames (for the sophisticated, skilled communicator who can 'speak to' those frames)	early, throughout; UNDERLYING, LINKING?; *Originating* in client-type; *Focused* on comparative disadvantages to comml.clients; *Motivated* by the perceived / interpreted / known lack of disadvantage for client-type; *Mediated* by perception/interpretation and client-type; *Addressable*	
Does early commitment-seeking based on a particular framing of sustainability place any constraints on future options? Does it not tie the project to a particular problem frame and its reasoning mechanism, which therefore sets up spectrum boundaries? Is this good or bad? Are the PPTs not bringing a particular spectrum to the table with their frames and values???	#Frame influence: individuals' location on a *Commitment Spectrum* after gaining early 'loose commitment' to framed sustainable design measures (FHO, EAF...)	INF IN FB: PPT probing and securing early loose commitment influences later frame-building	early, throughout; UNDERPINNING, INTERACTING/LINKING; *Originating* in initial interactions; *Focused* on PPT gaining client's early 'loose commitment'; *Motivated* by briefing-stage problem-solving and need for clarity; *Mediated* by PPTs and CLs individual differences, frames and frame-building approaches; *Implications* entail early SPECTRUM DEFINITION and positioning, which influence later frame-building and maintenance; Accessible and addressable	*SHs commitment to sustainability and PPTs interpretation of their location on sustainability spectrum both potentially mediated by SH/PPTs VALUES* *Commitment to sustainability mediated by VALUES.*
	#Frame influence: competitiveness angle filtered down from large to smaller commercial clients (WDLP > VTA)	INF IN FB: UNDERLYING? commercial competitiveness	early, throughout; UNDERLYING / UNDERPINNING, LINKING; *Originating* in commercial client-type; *Focused* on links within commercial industries and *Motivated* by client competitiveness / business drivers; *Mediated* by connectivity and linkages with wider industry and individual client concern for competitiveness; *Accessible* through dialogue, unknown negotiability	*Concern for competitiveness potentially mediated by VALUES*
	#PF Framing perspective/influence; Client experience a major influence on sustainability interest and outcomes (POSITIVE comml: VTA, CAS; NEGATIVE commercial: NCD, PRF, VFS;	INF IN FB: client experience; NEUTRAL-NEGATIVE impact depending on client-type and industry; SIGNIFICANT DRIVER/INFLUENCE	early, throughout; UNDERLYING / UNDERPINNING / INTERACTING; *Originates in, Motivated and Mediated* by	

		VALUE-FRAMES	*Motivated* by the benefits accrued; *Mediated* by individual differences in perception/interpretation of sustainability/design; Addressable	'BENEFICIAL commercially'
UNDERPINNING drivers and influences are overt and visible, UNDERLYING are covert, subtle, almost invisible.	#PF Influences: BIM planned information models and their predictions, versus actual outcomes 14.10	INF IN FB: Choice to use BIM/information technology influences how design problems are framed and solved; unclear impact, based on the circumstances	early, throughout to post-occupation; INTERACTING, LINKING; *Originating* in technology choice; *Motivated* by technology capabilities and outputs; *Focused* on predictions versus actual outcomes; *Mediated* by project type, size, budget, timescale; *Addressable* and negotiable	*Selection of BIM and adoption of associated new ways of thinking potentially mediated by SHs/PPTs VALUES and associated evaluations* WHAT VALUE-FRAMES ARE LINKED DIRECTLY/VICARIOUSLY, OR MEDIATED BY OTHER INFLUENCES?
'FLAG'	#Frame influence: adoption of BIM technology changes ways of thinking about sustainability in design and construction	INF IN FB; UNDERLYING; BIM technology 'way of thinking' influences SUST frames	early, throughout; UNDERLYING, INTERACTING; *Originating* in technology choice; *Motivated* by technology capabilities and outputs; *Focused* on 'new ways of thinking' about design and sustainability; *Mediated* by individual differences in use of BIM, approaching and thinking about and framing design problems; *Addressable* and negotiable through accessing thinking processes	
'my understanding'/a euphemism for interpretation?	#Frame Influence: sustainability requirements "understood" by the client re: other's supply chain entry: filters into project sustainability (VTA, ...)	INF IN FB: supply chain entry precipitates particular sust. frames	early, throughout; UNDERPINNING AND OVERRIDING/OVERARCHING, INTERACTING; *Originates* in the client's industry; *Focuses on, Motivated and Mediated* by client's contractual compliance with supply chain requirements; not addressable or negotiable	OVERriding/ARCHING in the sense that if we don't comply with these supply chain requirements we don't get the contract / therefore we value these supply chain reqmts. complying with. VICARIOUS VALUE (VF)
L161-162 suggest the skill sophistication of this PPT in differentiating subtle refinements in their problemframing	#Frame influence: commercial client type: Larger commercial clients embrace sustainability because it gives competitive advantage to 'stand out' (VTA, HEC, DCW, WFES, WFEG) MKTG.	INF IN FB: client type influences commercially competitive advantage-type problem frames (for the sophisticated, skilled communicator who can 'speak to' those ~~frames~~ VALUES)	early, throughout; UNDERPINNING AND OVERRIDING; *Originating* in client type; *Focused* on and *Motivated* by satisfying clients (commercial) needs; *Mediated* by the circumstantial evaluation of what commercial awareness entails;	*Concern for competitiveness potentially mediated by VALUES* 14.12
	#Frame influence: client type: Small commercial clients not disadvantaged by lack of sustainability (RSJ, RSP, VFS) 14.14 14.23	INF IN FB; client type influences commercially competitive advantage-type problem frames (for the sophisticated, skilled communicator who can 'speak to' those ~~frames~~ VALUES)	early, throughout; UNDERLYING, LINKING?; *Originating* in client-type; *Focused* on comparative disadvantages to comml.clients; *Motivated* by the perceived / interpreted / known lack of disadvantage for client-type; *Mediated* by perception/interpretation and client-type; *Addressable*	
14b Does early commitment-seeking based on a particular framing of sustainability place any constraints on future options? Does it not tie the project to a particular problem frame and its reasoning mechanism, which therefore sets up spectrum boundaries? Is this good or bad? Are the PPTs not bringing a particular spectrum to the table with their frames and values???	#Frame influence: individuals' location on a *Commitment Spectrum* after gaining early 'loose commitment' to framed sustainable design measures (FHO, EAF...) 14.15	INF IN FB: PPT probing and securing early loose commitment influences later frame-building 14.26	early, throughout; UNDERPINNING, INTERACTING/LINKING; *Originating* in initial interactions; *Focused* on PPT gaining client's early 'loose commitment'; *Motivated* by briefing-stage problem-solving and need for clarity; *Mediated* by PPTs and CLs individual differences, frames and frame-building approaches; *Implications* entail early SPECTRUM DEFINITION and positioning, which influence later frame-building and maintenance; Accessible and addressable	*SHs commitment to sustainability and PPTs interpretation of their location on sustainability spectrum both potentially mediated by SH/PPTs VALUES* *Commitment to sustainability mediated by VALUES.* issue HOW? One to have where they originate; on what it's focused; by what it's motivated & its relation to their values/system; by what it's mediated; and the
	#Frame influence: competitiveness angle filtered down from large to smaller commercial clients (WDLP > VTA)	INF IN FB; UNDERLYING? commercial competitiveness	early, throughout; UNDERLYING / UNDERPINNING, LINKING; *Originating* in commercial client-type; *Focused* on links within commercial industries and *Motivated* by client competitiveness / business drivers; *Mediated* by connectivity and linkages with wider industry and individual client concern for competitiveness; *Accessible* through dialogue, unknown negotiability	*Concern for competitiveness potentially mediated by VALUES* interpretations (circumstantial) of the issue's IMPLICATIONS; and how & when in the process they are evaluated (decl4.8)
	#PF Framing perspective/influence: Client experience a major influence on sustainability interest and outcomes (POSITIVE comml: VTA, CAS; NEGATIVE commercial: NCD, PRE, VFS; resi: FHO, EAF...)	INF IN FB: clientexperience; NEUTRAL-NEGATIVE impact depending on client-type and industry; SIGNIFICANT DRIVER/INFLUENCE	early, throughout; UNDERLYING / UNDERPINNING / INTERACTING; *Originates in, Motivated and Mediated* by client's prior experience; *Focused* on sustainability interest and outcomes; *Accessible* via dialogue, non-negotiable yet potentially *Addressable* via dialogue; i.e. experience is not a *fait accompli*	Surely client experience has a bearing on CL. VALUES
X6 INFLUENCING CONCEPTUAL LINKS	#Frame influence: Pressure from commercial funders for sustainability is greater than from residential funders: 'big driver for sustainability' (TVA, DRR, DCW)	INF IN FB: OVERARCHING; client type funding pressure; POS for comml. NEG for resi. 14.23 14.30 14.24	early, throughout; OVERARCHING / OVERRIDING; *Originates* in client-type and funding arrangements; *Focuses* on funder's requirements, pressures; *Motivated* by complying with funder's requirements; *Mediated* by funding needs and relationships with funders; *Accessible* via client dialogue, Addressable potentially via funder dialogue	14.19 *Relationships with funders potentially mediated by VALUES* (LF) WHAT RELATIONSHIP? VALUES AS MEDIATORS, MOTIVATORS & INFLUENCERS (14.15, 14.20) (14.4, 14.8)
	#FRAME INFLUENCE; PPT's KNOWLEDGE of BE IMPACTS	INF IN FB: past experience/knowledge of BE impacts inform framing approach(?); POSITIVE 14.27 14.31	early, throughout; UNDERLYING / UNDERPINNING / INTERACTING; *Originatesin, Motivated and Mediated* by PPTs prior experience; *Focused* on knowledge of BE impacts and LINKED to sustainability interest and outcomes; *Accessible* and *Negotiable* via dialogue; i.e. experience is not a *fait accompli*	
	#Problem frame influence / Sustainability driver: commercial funding pressure to achieve certain standards; identifying want and need 14.20	INF IN FB: funding pressure; POSITIVE impact when funders press for higher targets, NEGATIVE when lower or none.	early-mid, throughout; OVERARCHING / OVERRIDING; *Originates* in client-type and funding arrangements; *Focuses* on funder's standards requirements, pressures; *Motivated* by complying with funder's requirements; *Mediated* by funding needs and relationships with funders; *Accessible* via client dialogue, Addressable potentially via funder dialogue	*Differentiating want and need potentially influenced and/or motivated by VALUES*
	#PF PROCESS INFLUENCE: Consultant-stakeholder involvement as 'strategic input expected early'	INF IN FB strategic input; POSITIVE impact;	early-mid; INTERACTING, LINKING; Originates in PPT-CL expectations; Focuses on strategic input of other consultants / stakeholders; Motivated and Mediated by project complexity and openmindedness; Addressable via dialogue	DOES PPT VALUE EARLY STRATEGIC INPUT?

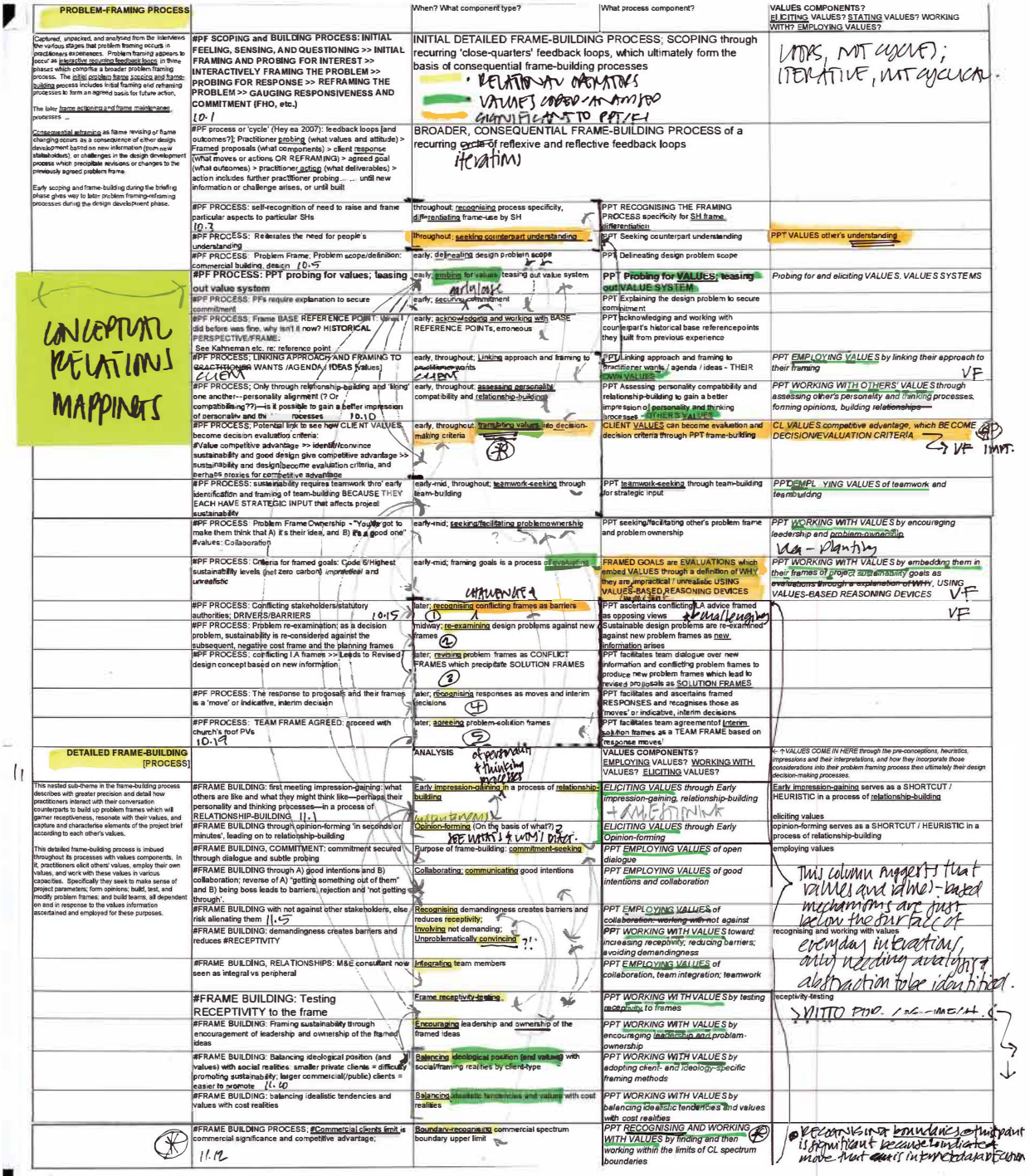
14.27

#PLUS RELATION TO VALUES/SYSTEM:? VF: VALUE FRAME LF: LEVER FRAME

RELATIONALLY CODED, THEMATICALLY CATEGORISED

THEMATIC ANALYSIS MATRIX

	#Frame influence and frame change: 'this sustainability measure is good' to 'this sustainability measure is not good'; fabric upgrades and PVs versus washing lines, etc. framed not as 'easy win' but 'waste of time' plastic washing lines are a waste of time, spend the time to earn the points on something more effective–for the building's efficiency, because this is what the PPT values...!	INF OF PF; evaluation duality of 'Good' versus 'Not Good' framings of particular sustainability measures precipitate valuation of sustainability & measures and influence choice; IMPACT UNCLEAR before the framing; IMPLICATIONS; individual evaluations of SustMeasures are based on individual values and influence sustainability problem frames;	Early-mid, throughout; INTERACTING, LINKING; ***Originates*** in and ***Focused*** on PPT individual evaluations of SustMeasures; ***Motivated / Mediated*** by / based on individual values and interpretation/judgement; Addressable via PPT dialogue (third-party)	*Individual evaluations of SustMeas. Mediated / motivated by individual VALUES, interpretation, judgement*
ACTING THROUGH OR DEPENDENT ON AN INTERVENING AGENCY, i.e. of values	#Frame influence, and frame change in cost-benefit analysis (CBA): sustainability measures without and then with two cost frames of CapEx and LCC (TVA)	INF OF PF; duality cost frame influences system decision: either-or, pay more now and save later, or pay less now and pay premiums later;	early-mid then runs throughout; INTERACTING, LINKING; ***Originates*** in client's request for cost-benefit analysis; ***Focused*** on long-term and short-term cost; ***Motivated*** by cost-benefit analysis; Mediated by interpretation of short/long-term benefits; ***Addressable*** through frames used for communicating the CBA	*VALUES dimensions present and influencing interpretations of short/long-term benefits as MEDIATORS, or MODERATORS.*
IMPORTANT	#PF INFLUENCES; COMML Client frame influences: "all they need" is money; therefore, if lack of sustainability framed as disadvantage and potential loss, then it affects them and is therefore valued. (TVA, DCW,... Because they are in a competitive industry and because they value competitiveness?	INF IN FB; Money as an INTERPRETED principal Client influence on FB; overall NEGATIVE impact that cost trumps sust; POSITIVE impact in CL understanding the disadvantages in terms of commercial loss w/o sust.	early-mid; UNDERPINNING (money-need), INTERACTING (commercial disadvantage / loss frames affects positive VALUATION); ***Originates*** in and Mediated by PPT experience-based preconception / interpretation of money as then principal client VALUE and frame driver; ***Focused*** on and ***Motivated*** by framing sustainability in ways that speak to money; Addressable via PPT dialogue	*VALUES <> FRAMES* *PPTs experience-based preconception / interpretation of money as a principal client VALUE then becomes a principal problem framing driver BECAUSE frames of commercial disadvantage / loss affect client EVALUATIONs of sustainability as something worthwhile and important.* *As one KI said, "all they need is money"; therefore, if the lack of sustainability is framed as disadvantage and potential loss, then it affects their money-driven clients and is therefore perceived as valued by them. The KIs perception of the effects of disadvantage and loss frames is important because it motivates practitioners to frame sustainability in ways that speak to money. If money frames work, if they garner reaction, then practitioners will use them. Political frames do not garner favourable reactions and are therefore not often used. Moral-ethical frames work with certain clients and not others. The consequence of this is that practitioners are led to perceive, interpret, and frame according to a money-focused perspective with most clients. When money frames garner reactions, they create patterns in practitioner's experience and thereby reinforce their perceptions of effective problem frames.*
	#PF INFLUENCES: CLIENT lack of want/interest/commitment in sustainability resulting from overriding demands influencing values-based decisions (CAS)	INF IN FB; overriding demands as influence on the PF, low interest, commitment, overriding demands; NEGATIVE impact, frames not working	early-mid; UNDERPINNING values, create OVERRIDING decisions; ***Originates*** in and ***Motivated*** by CL values of human welfare; ***Focused*** on providing for human welfare; ***Mediated*** by overriding demands/conditions from compound confounding influences; ***Accessible*** but potentially ***not addressable*** due to mitigating circumstances	*VALUES-based decisions can precipitate overriding demands which are ultimately incompatible with sustainability*
	#PF INFLUENCES; Frame perspectives / key success factors: understanding planning officer, committed client CAS, FHO	INF IN FB; favourable/amenable perspectives on and commitment to sustainability; KEY SUCCESS FACTORS	early-mid; INTERACTING, potentially OVERRIDING: ***Origin in, Focus on, and Motivated by*** interactions with, interpretations by, understanding and commitment from other key stakeholders as key success factors; Mediated by and Accessible/Addressable through PPT interaction and framing skill;	*Understanding and commitment VALUED by PPT*
	#PF INFLUENCE: PO/Planner's frame of 'Countryside Visual Impact (CVI)'; New influence in problem framing (FHO)	INF OF PF; SH PF *CVI/impact framing*; NEGATIVE for the project, POSITIVE for proponents of low CVI	early-mid; INTERACTING, LINKING, OVERRIDING; ***Originating*** in PO evaluation of visual impact of PVs in countryside; ***Motivated*** by responsibility/duty, and Natural England; ***Focus*** on and evaluations of relative impact of PVs in countryside; ***Mediated*** by POs interpretation/ judgement/ evaluation; Addressable via PO negotiation	*Planners VALUE-FRAME of CVI*
	#Frame INFLUENCE: local authority and outside advisors impasse (CAS)	INF IN FB; INTERACTING; SHs lack of agreement; decision process; NEGATIVE	midway; INTERACTING>OVERRIDING; ***Origin / Focus / Motivated*** by SHs lack of agreement; ***Mediated*** by frames and lack of shared frames and mutually incompatible values; Potentially addressable via improved inter-stakeholder dialogue towards shared frames and inter-SH values understanding.	*SHs VALUES influence and mediate approaches to interactions and willingness to cooperate; incompatible VALUES lead to irreconcileable differences and impasses*
	#PF INFLUENCES: Change in Stakeholder's (EH) attitudes toward modernisation as conservation versus preservation; (HEC)	INF IN FB; SH influence on the PF; accepting reasonable solutions; NEUTRAL-POSITIVE	unclear, presumably early-mid; INTERACTING (SH attitudes>SH advice/evaluations), LINKING (modernity and conservation); ***Origin / Focus / Motivation / Mediated*** in/by SHs limited interpretations of conservation as preservation; also ***Mediated*** by PPT-CL interpretations and frames; ***Addressable*** potentially via SH dialogue	*SHs values of preservation trumped any views of pragmatism or realism, placing them at odds or incompatable with PPT and CL's VALUES .*
	#PF INFLUENCES; Sustainability problem frame influences: Political pressures on sustainability policy from big house builders who challenge government targets through COST FRAME, leading to outcries from public about SUST impacts on housebuilding	INF OF PF >> leads to >> INF IN FB; Political Contextual/structural influences on PF inputs; NEGATIVE	unclear; possibly UNDERLYING/ INTERACTING? ***Originating/ Focusing/ Motivated/ Mediated*** in 'big house builders' values, resulting policy pressure; Not likely addressable	*Political pressures influenced/mediated by SHs VALUES*
	#Frame INFLUENCE: interrelated, integral design issues (TVA, CAS, RYMS)	INF IN FB; INTEGRAL, LINKING; based on PPT's approach, whether recognising integral nature of sustainability; generally NEGATIVE, but can be POSITIVE impact depending on the system, complexity and the drivers; cf. TVA office HVAC syst as NEG; CAS as NEG; new RMYS Flats NEG (i.e. remove consid.contr. add one more PV)	throughout; integral; INTERACTING, LINKING; ***Originating*** in both the integral nature of sustainability and PPTs approach to it; ***Focus*** on the interpretation and interaction with system complexity; ***Motivated*** and ***Mediated*** by individual differences in approaches and values, the recognition of and subsequent desire to address complexity, and the need for clarity; Accessible via interaction, experience	*Interpretation, interaction and approach to complexity and integral nature mediated by PPT VALUES*



PROBLEM-FRAMING PROCESS		When? What component type?	What process component?	VALUES COMPONENTS? ELICITING VALUES? STATING VALUES? WORKING WITH? EMPLOYING VALUES?
Captured, unpacked, and analysed from the interviews the various stages that problem framing occurs in practitioners experiences. Problem framing appears to occur as interactive recurring feedback loops in three phases which comprise a broader problem framing process. The initial problem frame scoping and frame-building process includes initial framing and reframing processes to form an agreed basis for future action. The later frame artiqoning and frame maintenance processes ... Consequential reframing as frame revising or frame changing occurs as a consequence of either design development based on new information (from new stakeholders), or challenges in the design development process which precipitate revisions or changes to the previously agreed problem frame. Early scoping and frame-building during the briefing phase gives way to later problem framing-reframing processes during the design development phase.	**#PF SCOPING and BUILDING PROCESS: INITIAL FEELING, SENSING, AND QUESTIONING >> INITIAL FRAMING AND PROBING FOR INTEREST >> INTERACTIVELY FRAMING THE PROBLEM >> PROBING FOR RESPONSE >> REFRAMING THE PROBLEM >> GAUGING RESPONSIVENESS AND COMMITMENT (FHO, etc.)** 10.1	INITIAL DETAILED FRAME-BUILDING PROCESS; SCOPING through recurring 'close-quarters' feedback loops, which ultimately form the basis of consequential frame-building processes		VALUES, NOT CYCLE); ITERATIVE, NOT CYCLICAL.
	#PF process or 'cycle' (Hey ea 2007): feedback loops [and outcomes?]; Practitioner probing (what values and attitude) > Framed proposals (what components) > client response (what moves or actions OR REFRAMING) > agreed goal (what outcomes) > practitioner acting (what deliverables) > action includes further practitioner probing... ... until new information or challenge arises, or until built	BROADER, CONSEQUENTIAL FRAME-BUILDING PROCESS of a recurring ~~cycle~~ of reflexive and reflective feedback loops		
	#PF PROCESS: self-recognition of need to raise and frame particular aspects to particular SHs 10.2	throughout; recognising process specificity, differentiating frame-use by SH	PPT RECOGNISING THE FRAMING PROCESS specificity for SH frame differentiation	
	#PF PROCESS: Reiterates the need for people's understanding	throughout; seeking counterpart understanding	PPT Seeking counterpart understanding	PPT VALUES other's understanding
	#PF PROCESS: Problem Frame, Problem scope/definition: commercial building, design 10.5	early; delineating design problem scope	PPT Delineating design problem scope	
CONCEPTUAL RELATIONAL MAPPINGS	**#PF PROCESS: PPT probing for values; teasing out value system**	early; probing for values; teasing out value system	PPT Probing for VALUES; teasing out VALUE SYSTEM	*Probing for and eliciting VALUES, VALUES SYSTEMS*
	#PF PROCESS: PFs require explanation to secure commitment	early; securing commitment	PPT Explaining the design problem to secure commitment	
	#PF PROCESS: Frame BASE REFERENCE POINT: 'what I did before was fine, why isn't it now? HISTORICAL PERSPECTIVE/FRAME; See Kahneman etc. re: reference point 10.10	early; acknowledging and working with BASE REFERENCE POINTS, erroneous	PPT acknowledging and working with counterpart's historical base reference points they built from previous experience	
	#PF PROCESS; LINKING APPROACH AND FRAMING TO PRACTITIONER WANTS /AGENDA / IDEAS [Values]	early, throughout; Linking approach and framing to practitioner wants	PPT Linking approach and framing to practitioner wants / agenda / ideas - THEIR [illegible]	*PPT EMPLOYING VALUES by linking their approach to their framing* VF
	#PF PROCESS; Only through relationship-building and 'liking' one another---personality alignment (? Or compatibilising??)—is it possible to gain a better impression of personality and thinking processes	early, throughout; assessing personality compatibility and relationship-building	PPT Assessing personality compatibility and relationship-building to gain a better impression of personality and thinking processes - OTHER'S VALUES	*PPT WORKING WITH OTHERS' VALUES through assessing other's personality and thinking processes, forming opinions, building relationships*
	#PF PROCESS; Potential link to see how CLIENT VALUES become decision evaluation criteria: #Value competitive advantage >> identify/convince sustainability and good design give competitive advantage >> sustainability and design become evaluation criteria, and perhaps proxies for competitive advantage	early, throughout; Translating values into decision-making criteria	CLIENT VALUES can become evaluation and decision criteria through PPT frame-building	*CL VALUES competitive advantage, which BECOME DECISION/EVALUATION CRITERIA* VF IMPT.
	#PF PROCESS: sustainability requires teamwork thro' early identification and framing of team-building BECAUSE THEY EACH HAVE STRATEGIC INPUT that affects project sustainability	early-mid, throughout; teamwork-seeking through team-building	PPT teamwork-seeking through team-building for strategic input	*PPT EMPL YING VALUES of teamwork and team building*
	#PF PROCESS: Problem Frame Ownership - "You've got to make them think that A) it's their idea, and B) it's a good one" #values: Collaboration	early-mid; seeking/facilitating problem ownership	PPT seeking/facilitating other's problem frame and problem ownership	*PPT WORKING WITH VALUES by encouraging leadership and problem-ownership*
	#PF PROCESS: Criteria for framed goals: Code 6/Highest sustainability levels (net zero carbon) unprecedent and unrealistic	early-mid; framing goals is a process of evaluating	FRAMED GOALS are EVALUATIONS which embed VALUES through a definition of WHY they are impractical / unrealistic USING VALUES-BASED REASONING DEVICES	*PPT WORKING WITH VALUES by embedding them in their frames of project and enabling goals as evaluations through a explanation of WHY, USING VALUES-BASED REASONING DEVICES* VF
	#PF PROCESS: Conflicting stakeholders/statutory authorities; DRIVERS/BARRIERS 10.15	later; recognising conflicting frames as barriers	PPT ascertains conflicting LA advice framed as opposing views	VF
	#PF PROCESS: Problem re-examination; as a decision problem, sustainability is re-considered against the subsequent, negative cost frame and the planning frames	midway; re-examining design problems against new frames	Sustainable design problems are re-examined against new problem frames as new information arises	
	#PF PROCESS: conflicting I.A frames >> Leads to Revised design concept based on new information	later; revising problem frames as CONFLICT FRAMES which precipitate SOLUTION FRAMES	PPT facilitates team dialogue over new information and conflicting problem frames to produce new problem frames which lead to revised proposals as SOLUTION FRAMES	
	#PF PROCESS: The response to proposals and their frames is a 'move' or indicative, interim decision	later; recognising responses as moves and interim decisions	PPT facilitates and ascertains framed RESPONSES and recognises those as 'moves' or indicative, interim decisions	
	#PF PROCESS: TEAM FRAME AGREED: proceed with church's roof PVs 10.19	later; agreeing problem-solution frames	PPT facilitates team agreement of interim solution frames as a TEAM FRAME based on response moves'	
DETAILED FRAME-BUILDING [PROCESS]		ANALYSIS of personality & thinking processes	VALUES COMPONENTS? EMPLOYING VALUES? WORKING WITH VALUES? ELICITING VALUES?	<- ↑VALUES COME IN HERE through the pre-conceptions, heuristics, impressions and their interpretations, and how they incorporate those considerations into their problem framing process then ultimately their design decision-making processes.
This nested sub-theme in the frame-building process describes with greater precision and detail how practitioners interact with their conversation counterparts to build up problem frames which will garner receptiveness, resonate with their values, and capture and characterise elements of the project brief according to each other's values. This detailed frame-building process is imbued throughout its processes with values components. In it, practitioners elicit others' values, employ their own values, and work with these values in various capacities. Specifically they seek to make sense of project parameters; form opinions; build, test, and modify problem frames; and build teams, all dependent on and in response to the values information ascertained and employed for these purposes.	#FRAME BUILDING: first meeting impression-gaining: what others are like and what they might think like—perhaps their personality and thinking processes—in a process of RELATIONSHIP-BUILDING 11.1	Early impression-gaining in a process of relationship-building	*ELICITING VALUES through Early impression-gaining, relationship-building*	Early impression-gaining serves as a SHORTCUT / HEURISTIC in a process of relationship-building
	#FRAME BUILDING through opinion-forming 'in seconds or minutes', leading on to relationship-building	Opinion-forming (On the basis of what?)	*ELICITING VALUES through Early Opinion-forming*	eliciting values opinion-forming serves as a SHORTCUT / HEURISTIC in a process of relationship-building
	#FRAME BUILDING, COMMITMENT: commitment secured through dialogue and subtle probing	Purpose of frame-building: commitment-seeking	*PPT EMPLOYING VALUES of open dialogue*	employing values
	#FRAME BUILDING through A) good intentions and B) collaboration; reverse of A) "getting something out of them" and B) being boss leads to barriers, rejection and 'not getting through'	Collaborating; communicating good intentions	*PPT EMPLOYING VALUES of good intentions and collaboration*	
	#FRAME BUILDING with not against other stakeholders, else risk alienating them 11.5	Recognising demandingness creates barriers and reduces receptivity;	*PPT EMPLOYING VALUES of collaboration- working with not against*	
	#FRAME BUILDING: demandingness creates barriers and reduces #RECEPTIVITY	Involving not demanding; Unproblematically convincing ?!	*PPT WORKING WITH VALUES toward increasing receptivity, reducing barriers; avoiding demandingness*	recognising and working with values
	#FRAME BUILDING, RELATIONSHIPS: M&E consultant now seen as integral vs peripheral	Integrating team members	*PPT EMPLOYING VALUES of collaboration, team integration; teamwork*	
	#FRAME BUILDING: Testing RECEPTIVITY to the frame	Frame receptivity-testing	*PPT WORKING WITH VALUES by testing receptivity to frames*	receptivity-testing
	#FRAME BUILDING: Framing sustainability through encouragement of leadership and ownership of the framed ideas	Encouraging leadership and ownership of the framed ideas	*PPT WORKING WITH VALUES by encouraging leadership and problem-ownership*	
	#FRAME BUILDING: Balancing ideological position (and values) with social realities: smaller private clients = difficulty promoting sustainability; larger commercial/(public) clients = easier to promote 11.10	Balancing ideological position (and values) with social/framing realities by client-type	*PPT WORKING WITH VALUES by adopting client- and ideology-specific framing methods*	
	#FRAME BUILDING: balancing idealistic tendencies and values with cost realities	Balancing idealistic tendencies and values with cost realities	*PPT WORKING WITH VALUES by balancing idealistic tendencies and values with cost realities*	
	#FRAME BUILDING PROCESS; #Commercial clients limit is commercial significance and competitive advantage; 11.12	Boundary-recognising commercial spectrum boundary upper limit	*PPT RECOGNISING AND WORKING WITH VALUES by finding and then working within the limits of CL spectrum boundaries*	

COGNITIVE PROCESSES / MECHANISMS (COG-MECH)		PROBING; ELICITING; RECOGNISING; WORKING WITH; EMPLOYING VALUES?	CONTINUUM: Intuitive, Quasi-rational, Analytical ITERATION OF FRAMING MOVES: Interpreting, Perceiving, Responding
see also frame building process	#FRAME BUILDING COGNITIVE MECHANISMS: #perceiving others moves through 'seeing the eyes'; 'seeing what they're thinking'; 'gauging reaction'; as #interpreting	Interpersonal INTERPRETATIONS of probing, gauging and interpreting counterpart's thoughts and reactions provide practitioners with socio-psychological	*EXPOSING AND #INTERPRETING VALUES*	*intuitively #perceiving and #interpreting*
	#FRAME BUILDING COG-MECHANISMS: perceiving and #interpreting counterpart's thoughts and reactions			
is there anything from the FRAME BUILDING PROCESS above that was not coded as COG-MECH but could be?	#FRAME BUILDING COG-MECH: Perceptions of Client's negative reaction to a beneficial framing breeds #interpretations of PPT's low expectations: 'I can see where this is going to go'	#interpreted #Perceptions of Negative reactions fed/bred and continue to feed/breed stereotyping and low expectations, fuelling interpretations and heuristics.	*not valuing #perceived in negative #reactions*	*#perceiving and #interpreting*
What about the intrinsic versus instrumental versus terminal values argument? Is it that client's values as intrinsic values are translated into instrumental values in the project? Perhaps the lack of intangible value seen in sustainability such as those associated with sustainability as a future-forward-looking issue with the short-term, tangible and instrumental outcomes is also a composite contributor to the lack of traction sustainability faces with many clients and practitioners.	#FRAME BUILDING COG-MECH: Getting some interest or decent reaction (i.e. #perceiving and #interpreting; 'understanding the need' 'you can go quite a long way down this particular line"	'Getting some interest' or 'decent reactions' indicating an 'understanding of the need' facilitates new pathways	*does interest and decent reaction indicate valuing / valuation?*	*#perceiving and #interpreting 'some interest' then #responding*
	#FRAME BUILDING COG-MECH, Commercial clients (including housebuilders) RECOGNISE Commercial benefit as a driver/influence	Commercial benefits recognised by commercial clients both drive and influence sustainability frame-building and decision-making processes. Not always the case with private clients; see line 61 above re: negative reactions.	*Commercial benefit of SUST valued by commercial clients; influences framing/decisionmaking*	*#perceiving commercial value in sustainability*
	#COG-MECH, PPT PRECONCEPTION / BIAS? PPT3 suggests diversity is divergence and incompatibility?	PPTs views espoused regarding diversity of opinion as divergence and incompatibility suggest some propensity for biased interpretations.	*PPT does not value diverse opinion*	*biased preconceptions influence #interpretations and #responses*
Type of task: Intuition-inducing or analysis-inducing For quasi-rational and IA-inducing see Table 2 Hammond ea, 1987, it is possible to differentiate the intuitive and analytical using table 1 properties of intuition and analysis	#COG-MECH?? #INTERPRETATIONS #IMPRESSIONS: "when I'm first meeting somebody, I'm trying to gain an impression of what they're like, what they might think like in all sorts of ways" #perceiving and #interpreting	Interpretation of thought patterns originating in first impressions provide the basis of future interactions. See also line 59-60 above on interpersonal hermeneutics as heuristics.	*Perceptions of values are interpreted and employed in response and action*	impressions as perceptions leading to interpretations, leading to responses/actions and interactions
Sustainable design decision problem framing is an interactive adaptive cognitive process exhibiting characteristics of both an intuition-inducing and an analysis-inducing tasks (Hammond ea, 1997). The former in terms of information gathering, processing, and communicating (GPC) ...		One of the 'ways they might think like' includes probing for and eliciting interestedness, preferences and priorities in terms of importance and meaningfulness to them - i.e. their values and value-oriented frames.	*Interest, preferences and priorities provide values-based information as values-frames and reciprocally inform PPTs values frames*	perceived interpretation-based inter/action cog-mech
	#COG-MECH?? #INTERPRETATIONS #IMPRESSIONS: "I've always been firmly of the opinion that if somebody doesn't like me, they're not likely to engage [with] or perhaps not even employ us ; now I don't think that's ever happened (...if) you're getting on well with this person who you've just met for the first time who is your potential client; you can start to gain an impression of what they're like and how they think."	Impressions of 'liking' provide PPTs with initial interpersonal interaction descriptive of thinking patterns on which immediate and future interactions are premised and developed. Opinion-based	*PPT probing for impressions of values information; eliciting; recognising*	interpretive perception-based inter/action cog-mech
On a continuum or spectrum of task conditions (Hammond ea, 1997), the initial phases of problem framing in the first interaction space is more of an intuition-inducing task. Through the information gathering and design development processes, later problem framing moves further along the continuum and takes on more characteristics of an analysis-inducing task whilst not reaching the completely analytical-rational end, appearing to remain quasi-rational and/or intuitive.	#COG-MECH?? #INTERPRETATIONS #IMPRESSIONS: "uses instant reactions as interpretive heuristics, particularly strong negativity towards sustainability suggestions (linked to beneficial frames)	Appears to use instant reactions as interpretive heuristics, particularly when their counterparts reactions are interpreted as a strong negativity towards sustainability suggestions (especially when linked to beneficial frames).	*PPT PERCEIVED Strong negativity towards sustainability suggestions interpreted as opposing PPTs values embedded in beneficial frames*	perception-based interpretive cog-mech
	#COG-MECH?? #INTERPRETATIONS #IMPRESSIONS Us in our profession, them in their profession...	Discipline-based biases of career choices (building inspectors) leading to lack of interest in sustainability issues	*'we value sustainability, they don't'*	perceived preconception-based interpretation cog-mech
	#COG-MECH, PPT PRECONCEPTION / BIAS: clients almost inevitably fight about money [both in and out of the context of sustainability]	PPT's experience-based preconceptions regarding CLs perennial budgetary concerns suggest learned partialities or biases which precipitate or favour certain approaches over others.	*PPT EMPLOYS preconceptions about clients money-centred values*	experienced preconception-based cog-mech
	#COG-MECH: Personal or *professional* judgement? Relationship is currently unclear: *"personal judgement is probably quite a strong thing, in that we'd all like to get as much energy, water saving into the buildings as we can, you know the natural ventilation, and so on."*	Personal/professional judgement of interpretive factors such as appropriateness, technical guidelines of sustainability codes, appear to act as a frame-building and decision-making heuristic	*PPT values efficiency*	interpretive action-based cog-mech cog-mech
	#PF COG-MECH; Early commitment not usually possible from others besides policy-holding corp/commercial clients.	Client-type fuels pre-conceptions regarding seeking early commitment	*The pre-commitment<>values relationship: SUSTAINABILITY Policy-holders value sustainability because their organisations have chosen to place it in their hierarchy of concerns.*	experienced preconception-based action/response cog-mech
	#PF heuristics and biases: Client frames: commercial client's eventually 'beaten into submission' on sustainability	Client-type pre-conceptions fuel perceptions of willingness to accept sustainability measures	*PPT perceiving/interpreting sustainability as not valued to commercial clients therefore 'beaten into submission'*	experienced preconception-based perception cog-mech
	#COG-MECH: Practitioner's perception of a #totally committed client's #values: "evangelical sustainability"; vegan, anti-cow-methane, straw bale walls, high achieving sustainability targets; fairly rare	Prior experience of at least one case of total commitment to sustainability interpreted as "evangelical" suggests potentially biased perceptions of upper-spectrum limits leading to commitment-based interpretive heuristics	PPT PERCEIVING CL VALUES AND IDEALISM	experienced commitment-based interpretive cog-mech
	#COG-MECH?? #INTERPRETATIONS #IMPRESSIONS: "an emphasis on some weird things in the code"	Interpretations of code requirements as 'weird' suggest learned partialities and mid-sustainability-spectrum alignment	*PPT not valuing certain code requirements*	learned preconception-based interpretive cog-mech
	#COG-MECH; INTERPRETATION: Sustainable Design – "it's just a thing that's on the consciousness, or should be on the consciousness, of all political parties."	Interpretations of the role of sustainable design in politics as "just a thing that's on the consciousness, or should be on the consciousness, of all political parties" precipitated the interpretive judgement that "sustainable design is too narrow a subject for politics." This also appears to have led consequentially to an avoidance of tying politics to sustainability, despite prior research which suggests that values are embedded in political views. Alternatively this might suggest that apoliticising sustainable design delimits opportunities for eliciting values-based information to which sustainability frames might speak. It might also suggest an avoidance of unnecessary conflict or opportunity for disagreement and subsequent alienation and job-loss.	*'on political party consciousness or should be' indicates a preference of political awareness versus action >> not valued enough by political parties*	perceived interpretation-based cog-mech
	#COG-MECH; INTERPRETATION: "sustainable design is too narrow a subject for politics." "So I think trying to associate it with politics... won't work at the end of the day."		*PPT not valuing sustainability to raise to a political topic*	perceived interpretation-based inter/action cog-mech

13 WHAT INFLUENCES THE PF PROCESS)

13.0

		Underlying, underpinning, linking, overriding, overarching? STAGE/FOCUS - ORIGIN - MOTIVATION; ACCCESSIBLE - MEDIATED - ADDRESSABLE	DRIVERS OF VALUES? DRIVEN BY VALUES?	IS THE SIGNIFICANCE? (Characteristic or DIMENSION as a construct by which 'objects' or 'individuals' can be distinguished [wordweb])
A typology of drivers as motivators [[and influences]] of PF processes has been identified throughout the practitioner's interviews and systematically unpacked. This has been facilitated via thematic analysis and decomposition of drivers' characteristics or dimensions and their properties or features. PROCESS Drivers are are significant in the SDDM process because of their influencing/motivating role in reasoning appropriate solutions. They are also significant because they have been demonstrated to be accessible to design practitioners through their interactive dialogue with stakeholders as conversation	#DRIVER, DECISION-MAKING: Interconnectivity, younger generation	UNDERLYING awareness? Interconnectivity motivations - Younger; internally/personally and externally/socially motivated; accessible through dialogue	SH VALUE of interconnectivity > STATING/EXPRESSING	UNDERLYING drivers
	#Frame driver/influence: continuous pressure for sustainability over long periods on commercial clients	UNDERLYING Continuous contextual/external pressures towards sustainability for commercial clients; motivated nationally and statutorily;		
	#PF DRIVERS; Small private clients frame drivers: lack commercial benefits of sustainability; Differentiating beneficiaries of commercial sustainability benefits	UNDERLYING frame driver by client type, originating in client-type differences, based on commercial benefits available to commercial clients, addressable through PPT dialogue	PPT values commercial benefits of SUST. V3	Ethical: Conforming to accepted standards of social or professional behaviour; Adhering to ethical and moral principles
values can and appear to be drivers of the problem framing process, and can be activated in the process. (*) Problem frame process drivers are broader process-guiding or -directing principles as motivators and influencers, whereas problem frame influences are detailed and specific motivating influences on individual frames between certain individuals.	#Frame drivers: Big house building clients know and understand drivers [PPT recognising client's prior experience, knowledgeand motivations]	UNDERLYING Commercial client's past experience knowing/understanding their drivers; externally and internally motivated, partly accessible through experiential knowledgeand potentially dialogue		
	#PF DRIVER: Clients spending their own money are more pragmatic, need to #value what they're doing to pursue It 13.5	UNDERLYING Client driver; client's self-funding requirements driven by client budgeting entail greater VALUES-based frames to promote & elicit pro-sustainability responses; accessible through dialogue	PPT INTERPRETATION OF CL VALUES AS FRAMES DRIVER V4 +> WORKING WITH (VF) 13.5	
	#PF DRIVER/MOTIVATION OR VALUES ATTACHED TO THE DRIVER; concern for future generations	UNDERLYING PPT-based other-focused future-concerning Values-based frame driver; socially mediated; made visible via dialogue	PPTs VALUES AS FRAMES DRIVER V5	
The recognition of certain forms of CL values by PPTs, whether through direct or indirect elicitation or interpretation, either informs or drives their construction of the problem framing process and subsequent formulation of problem frames. This appears to be because they are recognised as important and therefore TRANSLATED into either intangible project drivers or tangible project goals, evaluation criteria, or briefing information.	#PF DRIVERS: Planning process necessitates early sustainable design decision processes to prevent time loss due to late changes	EARLY ~~UNDERPINNING~~ INTERACTING Statutory regulations-based externally motivated early design management frame driver; Semi-negotiable project driver addressable through PPT dialogue	[illegible] of time-loss and late changes V6	
Ideals and values are translated indirectly into project evaluation criteria because values are intangible and currently unmeasured, whereas tangible evaluation characteristics such as thermal transmittance requirements, lifecycle costing, or CO2 emissions criteria are readily evaluated because industry-standard metrics have been previously established.	#DRIVERS; CLIENT DRIVER AND/OR VALUES (???) Sustainability measures (valued) as small income-generators for third sector clients	EARLY UNDERPINNING client driver: financial valuation of sustainability measures as small income-generators by third sector clients; based on prior knowledge, focused on income-generation, motivated/mediated by community-focused responsibility	PPT INTERPRETATION OF CL VALUES: INFLUENCES OF, V7	UNDERPINNING drivers relate to motivations and influences that underpin a significant part or element of the SDDM process to/that establish a foundation on which the project develops. If accessible via communication frames and values activation, then this can become an important entry or reinforcement point about sustainabilty and its value.
CL values that are compatible with PPT values are readily recognised and translated into projects, whereas incompatible values are subtly downpayed or openly challenged. Altough difficult to detect in the transcripts, such downplays included references such as 'tacky bits', treated disparagingly such as being 'very idealistic', not worthwhile such as 'some plastic thingy', or considered as conflicts such as 'preservation versus progress' or 'all they need is money'. this appears to be the result of mis-perceptions of certain values or	#DRIVER: faith-based RESPONSIBILITY to provide for the community, externally publically funded; versus: Faith-related community-focused responsibility as community-based driver to benefit the COMMUNITY but associated with a faith-based RESPONSIBILITY, church funded	EARLY UNDERPINNING client driver; Responsibility as a driving value for Third sector clients; based on and motivated by fundamental, pre-existing client philosophical principles; accessible through dialogue, mediated by religious faith, likely non-negotiable	PPT INTERPRETATION OF CL VALUES AS FRAMES DRIVER V8 (VF) 13.8	
	#DRIVERS: Small private client #sustainability drivers: idealism and values: How important is sustainability to me? 13.10	UNDERPINNING client driver; early-mid; Principles originating as idealism and values, motivating private clients; focused on relative importance of sustainability measures; accessible & addressible through dialogue;	PPT ELICITATION OF CL VALUES AS FRAMES DRIVER 13.9 (VF) V9	
	#PF DRIVER; PPT SUSTAINABILITY FRAME (DRIVER): Ethical approach, right-thing-to-do, is essential	UNDERPINNING client and project focused PPT values-based driver of and mediated by professional judgement (and experience). Accessible via third-party dialogue (Altruism/ethical)	PPT EXPRESSION OF VALUES AS FRAMES DRIVER V10	(VF) 13.10
	#PF DRIVER, CLIENT: integrated driver; to provide social benefits, community benefits, through a sense of responsibility [PPT RECOGNITION OF CLIENT'S VALUES]	UNDERPINNING Client driver internally motivated by religio-ethical principles permit values-based frames; accessible through dialogue	~~PPT RECOGNITION OF CLIENT'S VALUES~~ AS FRAMES DRIVER V11	
	#FRAME DRIVER: responsibility to the community, religion-based	UNDERPINNING client-based end-user focused ethics-based frame driver regarding Community	CL VALUES INFLUENCING FRAMES V12	
	#FRAME, DRIVER: responsibility to the community, religious/community-based	Responsibility Values-based driver; socially mediated; accessible via dialogue, probably non-	CL VALUES of community responsibility V13	
	#PF PROCESS DRIVER/INFLUENCE: PPT links ideals to values: 'how important is it to me?' > Ideals andvalues significant drivers for private clients [see also Line 122] 13.15	EARLY (underpinning?) LINKAGES of private client ideals to problem-driving values; defining relative importance of key drivers originating from the ~~reasoning mechanisms and conditions (pos.) or~~ constraints (neg.) driving their decision to build	PPT makes VALUES linkages to ideals > WORKING WITH V14	LINKING drivers demonstrate how two or more process components are connected to motivate and/or influence the SDDM process.
	#FRAME DRIVERS ~~as a balance~~ of the balancing between competing needs, based on #VALUES / ETHICAL PRINCIPLES	INTERACTING LINKED Values-based project /frame driver. PPT-based, Project/design/client-stakeholder management focused; PPT balancing competing needs; accessible & addressable through PPT dialogue	VALUES-based frames based on SH Values / ethical principles BALANCING V15 > WORKING WITH	
NATURE of the design problem drives & constrains possible frames & solutions	#DRIVERS and BARRIERS very clearly linked; once youre in a position to understand them, you can't foresee whats going to happen in the future, but there are linked drivers and barriers.	INTERACTING, LINKAGES of drivers to problem-defining CONSTRAINTS: overcoming a current problem or seeking some new desired state can be characterised as a CONSTRAINT which drives the process		LINKS TO BARRIERS. TAUTOLOGOUS!!
	#PF DRIVER: funder's awkward questions PPT interpretation	INTERACTING, LINKED Funder-based and project/client focusedClient driver, originating externally; managed by client and interpreted by PPT; financially, socially and hermenutically mediated; accessible potentially addressable		
	#FRAME DRIVER: M&E strategy with options drives PPT framing (possibilities)	LATER INTERACTING, LINKED Project-related frame driver, originating in design decision processes leading to M&E strategy addressable with SHs through PPT dialogue		
	#PF DRIVER: Clients spending others' financing money go further to meet funder's requirements, regardless of their own wants/needs. 13.20	INTERACTING, OVERRIDING Client-based, funder-focused 'spending' frame and driver, externally originated and motivated, financially-based frame driver, financially and socially mediated; accessible but likely non-negotiable	CL values meeting funders' requirements V16	
	#PF PROCESS DRIVERS; SUSTAINABILITY DRIVERS: funding pressures	OVERARCHING and OVERRIDING client-based process driver of Funding Pressure, on most clients;		
	#DRIVERS; Frame Drivers: pushing for efficiency without losing the job: SEE 'PROBLEM OF SUSTAINABILITY DIAGRAM'	OVERARCHING PPT and project-based process driver from PPT pushing for efficiency on all projects within allowable limits; originating in PPT VALUES; motivation unclear, potentially values-based; mediated by client and project variables; accessible and addressible via third-party dialogue	VALUES - important PPT access point V17	Begs the question whether values are negotiable or rather considered dormant but activated via key access points
	#PF PROCESS DRIVER/INFLUENCE, Commercial clients (including housebuilders): RECOGNISE Commercial benefit as a driver/influence	OVERARCHING project-based OUTCOMES-DRIVER for Commercial clients as their recognition and VALUING of commercial benefits of sustainability measures; originating in the driving ~~principles of commercial business; accessible &~~ addressible through communication/dialogue	V18	
	#DRIVERS Commercial client sustainability drivers: view sustainability as a selling point / marketing	OVERARCHING project-based OUTCOMES-DRIVER for Commercial clients, as Outcome-focused Sales and Marketing: originating in the driving principles of commercial business accessible & addressible through communication/dialogue	Sust value sales & marketing impact positive V19	
	#DRIVERS; PRIVATE CLIENT DRIVER: not running costs or energy use 13.25	OVERARCHING client-based OUTCOMES-driver: Private client non-driver, in-occupation running and energy use costs		

6	NARROWER FRAMING INPUT PERSPECTIVES		PERSPECTIVE TYPE & ROLE	SIGNIFICANCE, IMPLICATIONS, IMPORTANCE	
	PPTs position on or viewpoints of their inputs into framing process that underlie or underpin, inform, and generate their approaches to detailed frame-building processes.	#PF PERSPECTIVE / BIAS (?!?!), ARCH: Private client's idealism as a *preconception* 'that's got to be overcome'	Client-focused Preconceived Aim in framing and decision processes	Overcoming client's idealistic preconceptions	underlying, underpinning, overriding, overarching, interacting, linking,
	Awareness, preconceived aims, prior knowledge	#PF PERSPECTIVE PPT says himself idealism "has to be tempered with pragmatism" and practical realities…	Client-focused Preconceived Aim in framing and decision processes	Tempering client's idealism with pragmatism and practical realities	
		#PF Framing perspective/influence: Client experience a major influence on sustainability interest and outcomes	Client-focused Preconceived Aim in framing and decision processes	Client experience a major influence on sustainability interest and outcomes	
		#PF PERSPECTIVE, ARCH: Equates project sustainability success with client's 'conversion' to sustainability	Client-focused Perspective/Preconceived Aim in framing and designing	Converting clients to adopt sustainability agendas for project success	
		#PF PERSPECTIVE Sustainability frame as a past-present, heritage-modernity dilemma;	Project-focused Perspective in balancing competing demands, prior to/over, overlapping	Considering sustainability in a heritage-modernity contest	
		#PF PERSPECTIVE, ARCH; Political-level agendas and policies affecting people adversely has produced backlash against Green Party locally.	Process-wide general awareness of political conditions/agendas and public opinion	Cognisance of current local political climate of backlash against Green Party	
		#PF Perspective, CLIENT; values/emphasis – ownership [suggesting options]	Client's Values-based Perspective elicited earlier (i.e. valuation of sustainability) informs practitioner's framing and designing, and client's problem/solution ownership	***Earlier elicitation of client's interests, values and emphases helps identify/narrow later frames of design options and ultimately design problem/solution ownership***	
		#PF PERSPECTIVE; REVISED LA PERSPECTIVE: CO not very keen, SO "better than nothing"; Reduced panels on church accepted [to be later rejected by lawyers]	PPT's interaction-based knowledge of detailed SH perspectives on sustainability issues	Later SH interactions expose/reveal their detailed perspectives + VALUES	

5	BROADER FRAMING PROCESS PERSPECTIVES		PERSPECTIVE TYPE & ROLE	SIGNIFICANCE, IMPLICATIONS, IMPORTANCE
	PPTs position on or broad views of the framing process that underlie or underpin, inform, and generate their approaches to problem framing in decision-making processes generally.	#Frame PERSPECTIVE: stated, underpinning practice philosophy that is applied/adapted to individual clients and projects FramING approach	Underpinning philosophy applied and adapted	Practice philosophy underpins approaches as a backdrop; applied and adapted project-specifically
	How is an approach and a perspective different?	#PF Perspective/approach; 'adopting the old practice way', partner in charge as lead designer	Underpinning approach & experience:	
	A perspective is a view, position or perhaps philosophy of the broader framing process. "A way of regarding situations or topics etc. (WW)"; a position or view.	#Frame PERSPECTIVE and frame INFLUENCE: Commercial-led developer approach and experience, rather than private client	Underpinning approach & experience: Commercial developer-led	Commercial developer-led approach underpins and informs problem framing
	An approach is a view or way of beginning to deal with framing; a strategy; "A tentative suggestion designed to elicit the reactions of others (W.W.)"	#Frame PERSPECTIVE: Approach depends on Client attitude [towards sustainability]	Generator of early ADAPTION: Client attitude	Client attitude precipitates sustainability approach
		#Frame PERSPECTIVE (elaboration): Private clients may ask practitioners to push a certain design ethos, but commercial developers won't	Generator of early ADAPTION: Client's design ethos/style needs	Private versus commercial client demands
		#PF Alternative perspectives/frames: challenges of PRESERVATION versus CONSERVATION	Generator of later DEMANDS & CHALLENGES: SH's Alternative perspectives	

4	STAKEHOLDERS / SH PERSPECTIVES		STAKEHOLDER TYPE, ROLE	SIGNIFICANCE TO PPT
		#SH NEW STAKEHOLDER: church flats client rep and client body: Vicar and Church Council	CLIENT/REP, DECISION-MAKER	PPT working to satisfy their NEEDS
		#SH NEW SH/PERSPECTIVE: Developer's buyers	END-USER, representation by variable proxy; variability potentially correlated to client's and speakers frames and values; SEE ALSO L22-CoID	PPT adopting their perspective temporarily, the attention to which determines the proxy variability of their representation
		#SH NEW SH/PERSPECTIVE: Government, national	GOVERNMENT, POLICY-MAKER	PPT adopting their perspective temporarily; PPT working to satisfy their POLICIES
		#SH NEW SH/PERSPECTIVE: Government, local authority, Planning Officer (PO)	GOVERNMENT, POLICY & RULE-MAKER, statutory, generally non-negotiable	PPT working to satisfy their POLICIES & RULES
		#SH NEW SH/PERSPECTIVE: Government, local authority, BUILDING CONTROL (BC)	GOVERNMENT, RULE-MAKER, statutory, generally non-negotiable	PPT working to satisfy their RULES, which are generally non-negotiable
		#SH NEW SH/PERSPECTIVE: Government, local authority, Conservation Officer (CO)	GOVERNMENT, RULE-MAKER, statutory, negotiable	PPT working to satisfy their RULES, which are generally non-negotiable
		#SH perspective/frames and values, CO: historic character paramount		
		#SH NEW SH/PERSPECTIVE: Residential developer	CLIENT, DECISION-MAKER	PPT working to satisfy their NEEDS, which can be negotiated
		#SH NEW SH/PERSPECTIVE: Project funders, banks	FUNDER, DECISION-MAKER	PPT working to satisfy their RULES & NEEDS
		#SH NEW SH/PERSPECTIVE: Lawyers	ADVISOR, DECISION-MAKER/INFLUENCER	PPT working to INCORPORATE their RULES & GUIDANCE
		#SH NEW SH/PERSPECTIVE: M&E consulting design eng.	ADVISOR, DECISION-MAKER/INFLUENCER	PPT working to INCORPORATE their RULES & GUIDANCE
		#SH NEW SH/PERSPECTIVE: PARISHONERS	END-USER, representation by variable proxy	*PPTs appear to adopt/represent/characterise the perspective of other key SH's temporarily, the attention to which determines the proxy variability of their representation, which varies according to the value placed on their views by ARCH/SH's.*
		#SH New Project/Client: PRIVATE RESI CLIENT, farmhouse	CLIENT, DECISION-MAKER, END-USER	PPT working to satisfy their NEEDS
		#SH NEW SH/PERSPECTIVE: English Heritage (EH)	SPECIAL INTEREST GROUP, STATUTORY CONSULTEE, advisor	PPT recognises and cognisant of their influence; PPT working to INCORPORATE their RULES & GUIDANCE
		#SH NEW PROJECT/CLIENT: village hall management committee	CLIENT/REP, DECISION-MAKER	PPT working to satisfy their NEEDS
		#SH NEW SH/PERSPECTIVE: big house builders	Industry client type, influential at policy-level	PPT recognises and cognisant of their influence

3	CLIENT TYPE		Principal Observations	
		#Client Type, COMMERCIAL developer-led;	'needs' require the 'most commercially-aware, well-designed course' etc.; gain benefits from sustainability measures not available to private clients	
		#Client Type, COMMERCIAL landlord;	sustainability regularly reinforced and required by third parties; ; gain benefits from sustainability measures not available to private clients	
		#Client Type, COMMUNITY;	advantageous to accruing multiple benefits	
		#Client Type, PRIVATE; idealistic	frequently idealistic; PPT feels need to overcome idealism, possibly related to commercial background	
		#Client Type, RELIGIOUS/THIRD SECTOR; advantageous to accruing multiple benefits	advantageous to accruing multiple benefits	

1 2	*THEME SET/CLASS*	*THEME/THEME SET AND REPRESENTATIVE STATEMENT*	*ANALYSIS, OBSERVATIONS, TYPOLOGY*	*SIGNIFICANCE, IMPLICATIONS, IMPORTANCE*
	CONTEXT	#PF CONTEXT: Broader geographic and strategic sustainability frames: washing lines versus Chinese coal-fired power stations		
	CONTEXTUAL INFLUENCE	#CONTEXTUAL INFLUENCE; HISTORY, PRIOR KNOWLEDGE: solar panels already installed (why, to generate income?)	PREVIOUS EXPERIENCE influences decision-making	
		#CONTEXTUAL INFLUENCE, ARCH: **trickle-down effect** from volume housebuilder and commercial developer to owner/occupier	Industry trickle-down effects from bigger players to smaller owners, occupiers, householders	

FRAMING BOUNDARIES		**Boundary typology**	**ANALYSIS**	
estimated in the initial interaction space through nse-making and nested frame-building and ion-forming processes; and subsequently adjusted d/or confirmed in later interaction spaces via hallenges and their lever-frames. Problem-framing boundaries are specific identifying factors which lead to the development of boundary-defining principles. They are intimately linked to frame responses, and indeed are defined by the responses to particular frames as interpreted by the practitioners. Responses indicating the outer limits of stakeholder's boundaries	#PF PROCESS BOUNDARIES: Residential/private clients limit is cost and getting through statutory approvals	Boundary/Limit FACTOR-IDENTIFIER: cost; statutory approvals	Critical Frames beyond cost and statutory requirements have all been shown to be **overturned or trumped by lever frames, which include compounded conflicts, financial considerations, and timescale/programme implications.**	
	#SPECTRUM BOUNDARY: "sustainability in terms of the running costs, the energy use and all the rest of it, isn't particularly a driver for her. It's putting this back into beneficial use which could then get some rent; […] But unless there's some particularly compelling reason, like she could get another £1000/mo. in rent, why spend the money?"	Boundary/Limit FACTOR-IDENTIFIER: RETURNS; beneficial use for financial gain, not running costs or energy use.	Compelling reasons tied to value-drivers of gaining additional rent derived from the building's beneficial use--beneficial in terms of financial benefit.	"it's that curve, the s-curve that says 'this is really interesting, and it's going to cost x-amount to get that extra', like twice as much to get that extra 5% etc."
which practitioners develop in the immediate context and informed by their experience of similar SHs and conditions. In this way, specific boundary-identifying factors inform and thereby influence practitioners' working definitions problem frame boundaries as principles. These principles appear to then provide practitioners with interpretive heuristics as rules-of-thumb in their subsequent sense-making, frame-building, and opinion-forming processes. See detail boxed in Col.D for specifics on values, etc.	#PF PROCESS INFLUENCE: BOUNDARY, CLIENT, farm building: separate PVs in the garden, 'not interested';	Boundary/Limit FACTOR-IDENTIFIER: not PVs in the garden	Interest, willingness, valuation	
	#PF PROCESS, BOUNDARIES: SUSTAINABILITY BOUNDARIES related to IMPORTANCE to SHs--how much they value sustainability	Boundary/Limit PRINCIPLE: valuation of sustainability and its relative position in individual's values hierarchy/system.	Values-based frames based on SH Valuations of both sustainability and interacting issues (legal, statutory, relative impact, practical, etc.) are effective to the extent or depth the associated values are held and the position of those values in ones values hierarchy/system. Except for CLs with evangelical views of SUST, all frames can be overturned/trumped by stronger value-frames.	
	#FRAME BUILDING LIMITS: Latter caveat recognises there is a limit to pushing:	Boundary/Limit PRINCIPLE: Recognition of limitations	Practitioners 'push' for or promote sustainability and the extent to which they continue to probe, frame, and reframe appears to be related to their ability to a) ascertain values information from their conversation counterpart, b) their counterpart's subsequent responsiveness to certain frames which may or may not speak to or activate those values, c) the practitioner's implicit assessment of their counterpart's boundaries, and d) the practitioner's willingness, skill, and fortitude in pressing those boundaries.	**Values-frames appear to be very successful in securing early commitments to sustainability. However, in every single conversation analysed there always appears to be a context-specific lever-frame that unseats any earlier loose commitment and recalibrates the project team's expectations and plans.**
	#PF PROCESS INFLUENCES: SUST AS BOUNDARY CONCEPT: Promoting sustainability is: going as far as you can			
	#PF PROCESS INFLUENCES: BOUNDARY, CLIENT, IDEALISM versus CLIENT INTEREST / WILLINGNESS AND VALUING SUSTAINABILITY;	Boundary/Limit PRINCIPLES: Idealism, interest, willingness, valuation	Interest, willingness, valuation	
	#PF PROCESS INFLUENCES: FRAMING BOUNDARY LIMIT IDENTIFIER: 'do we really need these things'	Boundary/Limit PRINCIPLE: "really need"		
	#PF PROCESS INFLUENCES: FRAMING BOUNDARY LIMIT REACHED: 'nobody can make you do it…'	Boundary/limit PRINCIPLE: COERCION; avoiding reframing, problem-solving and encouragement turning to coercion		

(META-)BARRIERS	#PF BARRIERS: MULTIPLE COMPETING FRAMES & AGENDAS CREATED BY INCREMENTAL, SYSTEMIC, STRUCTURAL CHALLENGES THAT ULTIMATELY IMPOSED BARRIERS TO SUSTAINABILITY (in the church flats project)	NEGATIVE EFFECTS of COMPOUNDED conditions on design solutions	
ANALYSED	#PF BARRIERS: Private client preconceptions and idealism	Private client preconceptions and idealism lead to unmet expectations and negative experiences of sustainability (FHO & eAF).	
	#PF BARRIERS: Conflicting advice from LA officers and statutory consultees	Conflicting advice from LA officers and statutory consultees without statutory prioritisation created confusion in the design team and limited the options for achieving high sustainability targets possible	
	#PF BARRIERS: Planning restrictions and heritage consultations	Negative effects on sustainability of planning restrictions and heritage consultations (CAS, HEC & FHO).	
	#PF BARRIERS: Aligning commercial sustainability with efficiency	Limitations imposed by aligning commercial sustainability with efficiency (TVA, DRR, DRBA others unnamed).	
	#PF BARRIERS: Statutory regs create a glass ceiling	Statutory regs create a glass ceiling; Commercial clients seek to comply with regulations and no more (TVA, DRR, DRBA others unnamed).	
	#PF BARRIERS: Cost and management implications of active sustainability measures	Cost and management implications of active sustainability measures create compounded barriers to commercial clients and average end-users (TVA, DRR, DRBA, others unnamed).	

PROBLEM FRAMING CONSTRAINTS (as influences)		ANALYSIS	ABSTRACTION ANALYSIS
Determined during design development. A constraint is different from a barrier in that the constraints place challenging *limitations* on the options available, whereas a barrier completely restricts any further movement beyond it. A constraint can become	#PF constraint/influence: conservation area height restrictions (re: PVs)	INF OF PF; framing PVs as a visual impact problem for conservation area height restrictions; NEGATIVE, framed by CO/PO to PPT	In these coded data slices, a problem recognised during the design development stages constrained the frames is used to promote or deny sustainability, which in turn

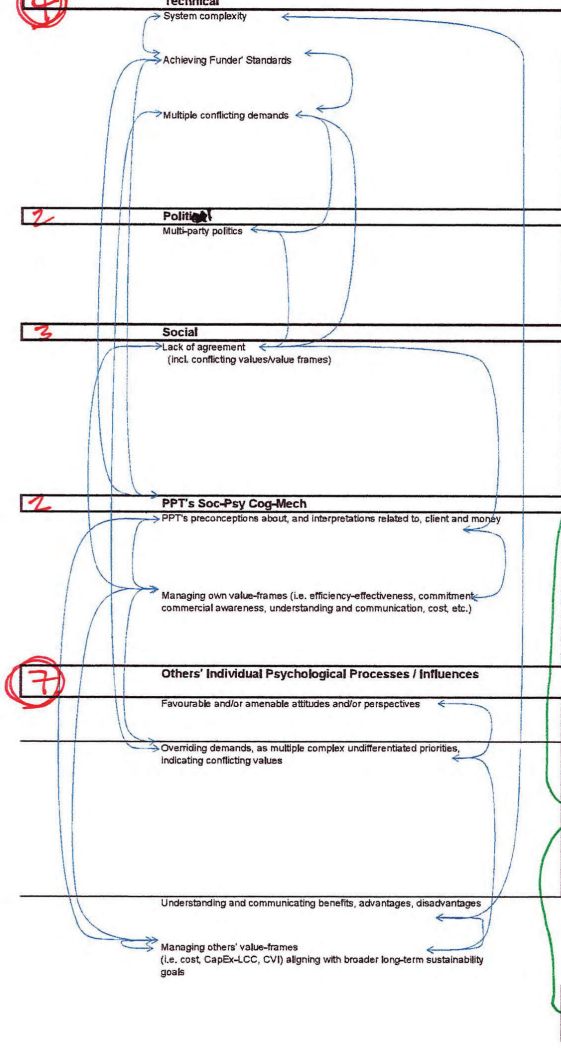
LINKS	**PPT links values to frames to frame receptivity to decision-making [A]** **PPT LINKS ACTIONS - DESIRES - VALUES - PERCEPTIONS - FRAMES IRRECEPTIVITY [B]**	"pissing in the wind" with those clients buying everything on the internet looking for the cheapest price. Links actions - desires - values - perceptions - frames unreceptivity [A] "I try and tease out of people what that sort of value system they hold, you soon pick up on the fact that if somebody really wants to support things like that, and they see that as sustainable, then you can push it and they will be receptive. [B] If they simply go on the internet to buy everything and couldn't give a toss where it comes from or how it gets there or how its made, they just want that because Doris down the road has got it and she said it was the best value product she could find, you're pissing in the wind frankly you'd never convince them."	Here, the practitioner's interpretation of the client's values is one of best-value spending unconcerned with impacts. It matters not whether the client's values are aligned with a lack of concern for CO2 footprints but how their counterpart architect perceives and interprets those values and translates those interpretations into their frame-building influences. Regardless of the client's early commitments to sustainability issues, finding out this and similar information has an influence on the way practitioners approach and frame the problem of sustainability. It leads the practitioner to an interim evaluation as a suspicion or expectation of a less-than-satisfactory end result despite securing early commitment. This evaluation then appears to inform or colour the subsequent sustainability frames and consequential decision-making process. By evaluating a seemingly disconnected action—internet purchases—the practitioner creates a heuristic for environmental impact values through their interpreted perceptions which later inform their values-commensurate frames that are down-graded as a result of such a interpretive evaluation. →	When the client is unreceptive to values-incommensurate frames, i.e. frames of sustainability that provide the client with few reasons commensurate with their more deeply-held values such as best-value spending, this serves to reinforce the practitioner's heuristic. The reverse of this is where a client or stakeholder signals their receptivity; the notion of practitioners 'pushing' sustainability to identify stakeholder's boundaries through the interpretation of signals is evidenced in the following extract. ↙
	PPT LINKS IDEALISM AND OPENNESS TO SUSTAINABILITY (?) **PPT links/recognising the benevolent / self-transcending values as more receptive to sustainability frames**	"Well, see you can push and I think we should, but you'll push so far before until the door closes on you. And its sort of going as far as you can. With some people you're pushing against an open door. Everything they do in life—I've come across this client and we're just going to do some shopfit work for her, but everything that she comes up with is tolerant, doesn't understand why anybody wouldn't let us do something if we [just] explain it to them; 'I'm quite happy to give them some benefit, I want to save the planet, I'm vegan, I don't agree with eating meat because of all the methane that the cows give off, and we torture them when we kill them.' Very, very idealistic. Promoting sustainability to her is pushing on an open door. Now you won't need to have any worries about cost or anything like that because if it's of benefit to the world she'll do it anyway." →	This is one example of how practitioners translate their counterpart's idealism; this form of idealism (CL:VFS) is interpreted as an outer-boundary case of openness to sustainability. Yet, earlier evidence demonstrated how a different strain of idealism interpreted in two different private clients (CL:FHO and EAF) was perceived and interpreted being difficult and lacking practical perception, which the practitioner inerpreted as a form of tunnelvision to be overcome. When asked how they come to find out such information from their conversation counterparts, one participant provided a particularly significant explanation of how the iterations of recursive-reflexive interpreting and responding manifest. ↙	
		"[...*how do you find that out?*] Just talk to her, just talk. [*It's an interpersonal skill?*] Yeah. That's the only way you can do it. It's like I've just mentioned the internet; it's like emails: you're never going to get what somebody wants from email exchanges. I can't see your eyes, I can't see what you're thinking, I can't gauge your reaction." →	It seems to matter the difference between perception and interpretation in this equation, where raw perceptions made by the sense faculties are evaluated whether reflectively or instinctively, intuitively or analytically, to form the basis of interpretations. Over repeated reinforcing, the heuristic as interpretive tool appears to become a bias when unpenetrating and unreflective evaluations of clients are made on the basis of past experiences and applied without new evaluation or reflection. →	Thus, a hallmark of the frame-building process is development and deployment of such heuristics developed over repeated experiences of variously-inclined clients, stakeholders, and perhaps other extra-project individuals. By experiencing both similar and dissimilar ***value-frame-reaction triads***, practitioners then calibrate, adjust, append, or discard their heuristics as relevant and successful in certain contexts with certain stakeholders. Having a collection of heuristics to recall from long-term into short-term memory also appears to vary according to experience and skill, whether inferential, interpretive, analytical, or intuitive. ↙
	PPT LINKS Private client cost frame to project sustainability: similarly balancing ideological position (and values) with cost realities: increased cost = decreased interest PPT links/recognition of environmental impact of poorly designed materials and buildings; re: asbestos and environmental impact of materials	Not only for private clients (such as the two aforementioned, CL:FHO and EAF) but also for sustainability-minded consultants (e.g. PR:NCD), the practitioners found themselves balancing their counterparts ideological positions and associated values with the cost realities of present-day architectural design and construction. With the two private clients, their idologically-driven values were challenged when the tender cost frame was raised by the cost consultants via the architects. →	The tender costs, particularly for the EAF clients, were originally predicted to be higher than the client's initial budgets; therefore, after the tender prices were evaluated they were framed to the client on the basis of the practitioners previous interpretation of their idealistic values in relation to their initial budget as being incongruent. With sustainability-minded consultants, two practitioners suggested how they found the need to 'reign in' the commercially overzealous proposals of these consultants to align with the project principles of cost-effectiveness and appropriately cost-efficient selection of sustainability measures. →	As the projects progressed, increased costs necessarily led to decreased interest in non-statutory sustainability measures and a consequential reduction of client commitment to sustainability issues. Thus the practitioner's balancing of costs higher-than-expected by the client against their idological positions as perceived and interpreted by the practitioner led to their entirely logical heuristic that an increase in project costs will lead to a decreased interest in sustainability measures, whether active or passive, on-site, or offset against investment elsewhere, particularly for those clients whose idealism they perceive as grossly incommensurate with their budgets and not boundary-definingly evangelical.

TIMING		What timing, when?	Which features?	
	#PF TIMING, INPUTS: Identifies (here and below) the inputs into frames in the early design process, and how it has changed historically: sustainable design issues now considered very early	Now considered very early in the design process	sustainable design issues incl. passive design; M&E input i.e. active measures	
	#PF TIMING: SHs engaged with sustainability during first briefing	introduced first briefing	sustainability	
	#PF TIMING: First briefing	introduced first briefing		
	#PF TIMING: initial discussions of sustainability's value/benefit	initial discussions of sustainability	value, benefits	
	#PF TIMING: sustainability introduced early/first briefing session regardless of stakeholder	introduction early, first briefing session	regardless of stakeholder	
	#PF TIMING: sustainable design issues introduced early on	introduction early	sustainable design issues	
	#PF TIMING: sustainable design issues now considered very early	considered early	sustainable design issues	
	#PF TIMING: #PF REASONING DEVICES: early 'loose commitment' informs design decision-making; reduces surprises and change	early loose commitment	commitment	
VALUES	**#VALUES, INFLUENCE: PPT recognises initial values and initial frames elicit responses which precipitate CRITICAL VALUES and reframing to ACHIEVE CLOSURE via COMMITMENT**			NEW Q: How are key decision-makers asked about their approaches to sustainability/environmental issues—**their frames**? How are they asked about their views, interests, their life philosophy—**their values**?

REFLECTIONS				
	#REFLECTION, RK: Goodwill declined > cost frame challenges the original "OPEN FRAME" > questioning necessity of measures originally framed openly	Pro-sustainabilityapproach characterised as 'goodwill'. This goodwill is an exemplar sentiment characterising the values-frames pairings for these clients (FHO).		
	#REFLECTION, RK: Does it matter why they pursue sustainability, just thatthey do so?	With the commercial and private clients as portrayed by these practitioners, it matters why they pursue sustainability because the why can be linked to values through the frames which activate and leverage them. The reasons for pursuing sustainability are bound up with the agreed joint or team frames. If the values to which particular problem frames speak are held weakly, then any decisions made on the basis of those values-frames *pairings* are more likely to be overturned by pairings of valuesframes which either take precedence or are held more strongly. As previously indicated, in each framing conversation levelframes activated and leveraged certain values which were either a) more closely ordeeply held by the SHs, orb) took greater precedence in the decision-making scenario than the sustainability-related valuesas characterised by the Key Informants. The precedence or priority ordering precipitated by new values-frames pairings appears to indicate a SHs values hierarchy. It is with this values heirarchy that the architects continue to work and frame sustainabledesign problems.	Perhaps reasons might be considered frames of a problem which are described using particular language to argue for or against a feature, move, decision or course of action. These reasoning frames have varying levels of meaning to a conversation audience. Persuasive argument will contain a number of reasoning frames whose meaning will resonate with, speak to, align or are compatible with an audience particular values. The degree to which reasoning frames resonate, speak, align or compatibilise values in a particular context is representative ofthe valuespriority hierarchy in that context. The value of sportsmanship in another context might translate into a value of teamwork and camaraderie in the projectcontextandthe team-building<>frame-building previously discussed. A value of care for the community in a religious context might translate into 'local' frames arguing in favour of sourcing local materials and labour.	These links are deep and subtle, take time to percolate through an individual's values system, and may require reinforcement to maintain, improve, and/or strengthen their positions in a hierarchy of values.
	#REFLECTION, RK: Halfexpectation of a less-than-satisfactory end result despite early commitment; re FHO #REFLECTION, RK: This suggests it is possible to accept and not align or accept an incompatibility for the sake of progressing the project. Re:Practitioner and Client responses to planner's 'countryside visual impact (CVI)' framing;	said like 'I already know how this is going to end up…' I can see where this is going…' Dual meaning-interpretation of frames of implied meaning-interpretation of authority and literal linguistic meaning of the visual impact of PVs on countryside views.	EXPECTATIONS…? What of them?	
	#REFLECTION, PPT SELF REFLECTION: missing important 'local' frames in his frame building, i.e. sust problem frames other than M&E (or fabric); links local prosperity to local sustainability arguments.	This (and the above in I.253) suggests that the values held in one context may not readily be recognised as applicable in another; perhaps in periods of self-reflection might the connection become apparent, or when activated in another context-bridging interaction.		
	#REFLECTION, PPT: self-recognition of need to raise and frame <u>more</u> particular aspects of local materials and fabricators, such as locally made timber windows, locally quarried brick and tile, timber doors, etc., because of their lowermanufacturing and transportimpact.			
	#REFLECTION, PPT: equates a significant challenge and possible failure of sustainability with deficit in collective agreement resulting from diversity of opinion #REFLECTION, PPT; INFLUENCE: diversity of sustainable design viewed as a positive for building towards a common goal because of its impacts and effects. #REFLECTION: confusion?; sustainability as a uniting, unifying organiser of human behaviour should be apolitical, or needing to transcend politics because of its multiple diverse impacts and effects	These two reflections point to the possibility of an underlying or implicit but <u>***principal* problem framing approach**</u> of frame-building as consensus-building. It also presents an interesting perspective on the PPT's dichotomous view regarding a duality in the diverse nature of both sustainability and opinion. The diversity of meaning and application of sustainability in design are coupled with the diversity of opinion, the PPTs earlier-mentioned views regarding politics, and each pursuing sustainability for their own reasons. When combined with their *person-centred interactive approach* to sensemaking, frame-building, and relationship-building, this appears to dichotomise the notion of consensus-building and sustainability as a potential future condition permitting and indeed requiring reasons for adoption that are at least individual-specific and frequently entirely situation-specific. →	Beyond statutory compliance, financial benefit, and marketing, there are very few reasons for adopting sustainability measures that appear to resonate significantly or deeply enough to withstand practical challenge with these commercially-oriented individuals' values for their own reasons. regardless of how they are framed. ✓	***<u>Combine views with approaches to determine principal frame-building perspective.</u>***
		The dichotomy appears between, a) the diverse nature of both sustainability and opinion, and b) the need for consensus-building in architectural design decision-making processes. If sustainability permits and requires individualistic reasons for adoption, and design decision-making demands consensus to proceed to a conclusion, then the approaches to securing sustainability must navigate a <u>**dual diversity-consensus-building path.**</u> This entails a frame-building processwhich either 1) skilfully 'speaks to' each individualand their valuessystem in ways that are meaningful to them whilst building broader consensus, or 2) skilfully developing reasons and arguments for adopting sustainability to which everyone can "buy into" through consensus-building. In the former, valuesframing takes precedence, with consensus-building overlaid or built into the process. In the latter, values-framingis employed in aid of the principal focus of consensus-building. →	Copious anecdotal evidence from political campaigns supports the view that widespread consensus-building among diverse opinion is at best an impractical challenge and more likely to be fictitious. →	If togetherthe individual-level valuesframingsare congruent or compatible, then a compatibility consensus can be formed. However, reasonsfor adopting (or rejecting) sustainability are in architectural design frequently and sometimes ultimately practical. This underlays a further layer of complexity about which both KI102 and KI203 frequently spoke-tempering the initial values-based idealism of both clients and consultants with the practical realities of architectural design and construction in South East UK as it is currently practiced and regulated. ✓
		Yet, the notion of a compatibility consensus does not appear to explain the prior finding around the project team accepting but not aligning with the planning officer's CVI decision. In the current analytical rendering of compatibility, it would be possible to acceptbut not have values compatible with individuals decidingthatthe countryside visual impact of PV panels outweighs their contribution to sustainability. This points to a different form of consensus: <u>**an acceptance consensus.**</u> →	Accepting and consenting are mutually compatible forms of choice or decision-making which allow for and explain the possibility that stakeholders can accept certain conclusions in aid of progressing projects whilst holding views and values that are incongruent or incompatible with the reasoning for such conclusion. →	This leads to the realisation that certain strongly-held values and associated idealisms are incompatible with current practical realities and to make any progress on what is ultimately a practical endeavour some concessions and sacrifices must be made. ✓
		Without violating theircore values, beliefs, and ideals, stakeholders can accept and consentto values-incompatible reasonings becausethe decisions are subsequently made on the basis of values-trumping or values-overriding practical requirements. Indeed, seen from the commercial perspective, values as guiding principles cease to be guiding and become dogmatically dictating principles when they override opposing practical challenges and jeopardise the endeavour. →	Yet this is a defining parameter of principled behaviour: bending without breaking in the face of fierce opposition. Values-based management (e.g. Anderson. 1997) employs this parameter and sustainability management based on values can work to achieve compatibility consensus by speaking to and activating individuals' values, providingthem with congruent, compatible, individualised reasons to pursue sustainability. →	This was also evident in PPTs responses to questions. accepting unsustainable conclusions to decision-making processes for thesake of progressing the jobandconcluding a stage for which payment could be received. Architectural practice is also a commercial enterprise which has practical concerns including financial obligations. ✓
		Without going into detail, erroneous analyses made on the basis ofgrosser interactions and conditions would have led to lessaccurateand nuanced findings. →	Examining these findings with the lens of two extant theories might provide them with a form of unified meta-explanation: the values-beliefs-norms (VBN) and the motivation-ability-opportunity (MAO) explanations of pro-environmental behaviour. →	LENS OF VBN-MAO values/ideals, beliefs/biases, norms/standards: motivation/drivers, ability/heuristics, opportunity/constraints/conditions SEE ALSO: INCOMMENSURABILITY OF VALUES
	#REFLECTION: confusion?; sustainability as a uniting, unifying organiser of human behaviour should be apolitical, or needing to transcend politics because of its multiple impacts and effects #REFLECTION, PPT: progress on sustainability must begin with current generations to give future gen something to continue to work with #REFLECTION, PPT: future generation left to accelerate sustainability #REFLECTION, PPT; INFLUENCE? survival is important to future generations, therefore sustainability is (or should be) important to them [possibly meaning its less important to PPT]	reactive and apolitical		

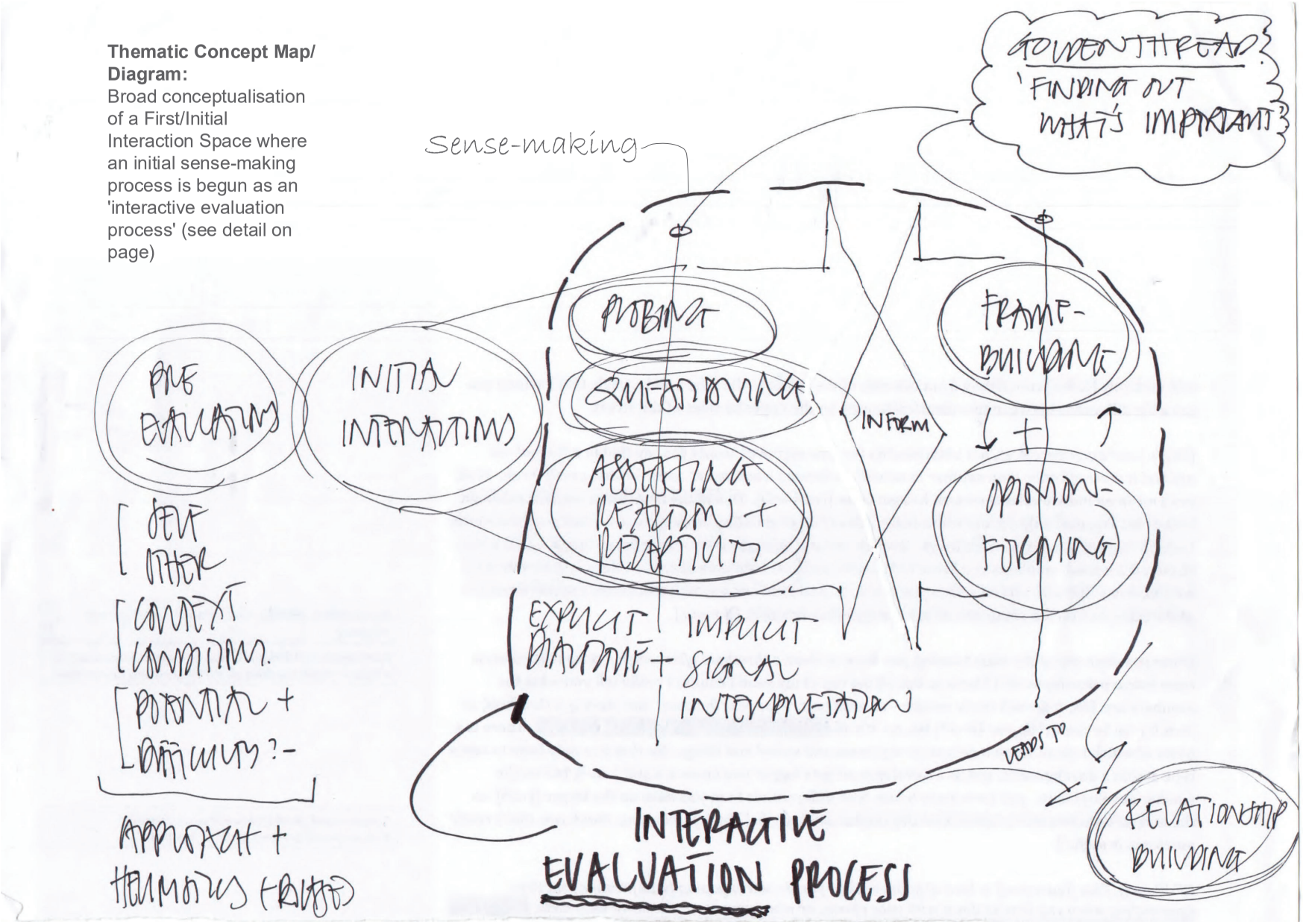
LEVER FRAMES ONLY

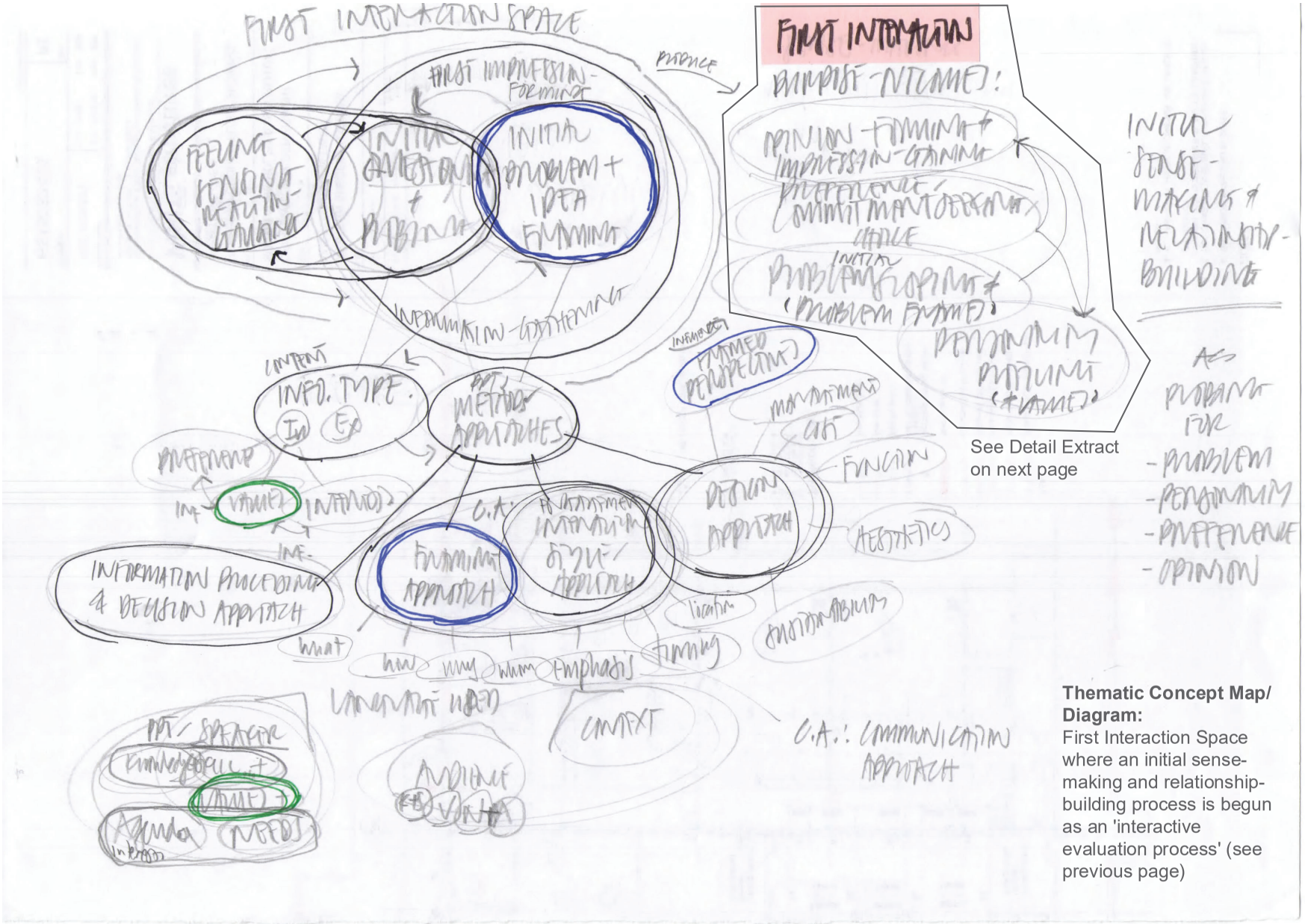
Linkages	Influence typology	Non-values infl.	Values Infl.	Value Frames	Lever Frames	Instances of the influence; as data nuggets/slices	Values component	Timing, Origin, Focus, Mediator, Motivator...
		Cross reference numerical code				Code, paraphrase or illustrative quote		
1	**Technical**							
	System complexity			14.23	14.23	Cost-benefit analysis and CapEx/LCC framing	VALUES dimensions present and influencing interpretations of short/long-term benefits as MEDIATORS, or MODERATORS.	early-mid then runs throughout; INTERACTING, LINKING; ***Originates*** in client's request for cost-benefit analysis; ***Focused*** on long-term and short-term cost; ***Motivated*** by cost-benefit analysis; Mediated by interpretation of short/long-term benefits; ***Addressable*** through frames used for communicating the CBA
	Achieving Funder Standards		14.18		14.18	Pressure from commercial funders greater than resi funders	Relationships with funders potentially mediated by VALUES	early, throughout; OVERARCHING / OVERRIDING; ***Originates*** in client-type and funding arrangements; ***Focuses*** on funder's requirements, pressures; ***Motivated*** by complying with funder's requirements; ***Mediated*** by funding needs and relationships with funders; ***Accessible*** via client dialogue, Addressable potentially via funder dialogue
	Multiple conflicting demands		14.28		14.28	Local authority and outside advisors impasse; incompatible values lead to irreconcileable impasse	SHs VALUES influence and mediate approaches to interactions and willingness to cooperate; incompatible VALUES lead to irreconcileable differences and impasses	midway; INTERACTING>OVERRIDING; ***Origin / Focus / Motivated*** by SHs lack of agreement; ***Mediated*** by frames and lack of shared frames and mutually incompatible values: Potentially ***addressable*** via improved inter-stakeholder dialogue towards shared frames and inter-SH values understanding.
			14.25		14.25	Multiple, conflicting, priority-undifferentiated demands; Client's overriding demands consequentially lead to lack of want/interest/commitment in sustainability, ultimately influencing values-based decisions	VALUES-based decisions can precipitate overriding demands which are ultimately incompatible with sustainability	early-mid; UNDERPINNING values, create OVERRIDING decisions; ***Originates*** in and ***Motivated*** by CL values of human welfare; ***Focused*** on providing for human welfare; ***Mediated*** by overriding demands/conditions from compound confounding influences; ***Accessible*** but potentially ***not addressable*** due to mitigating circumstances
2	**Political**							
	Multi-party politics		14.25		14.25	Multiple, conflicting, priority-undifferentiated demands; Client's overriding demands consequentially lead to lack of want/interest/commitment in sustainability, ultimately influencing values-based decisions	VALUES-based decisions can precipitate overriding demands which are ultimately incompatible with sustainability	early-mid; UNDERPINNING values, create OVERRIDING decisions; ***Originates*** in and ***Motivated*** by CL values of human welfare; ***Focused*** on providing for human welfare; ***Mediated*** by overriding demands/conditions from compound confounding influences; ***Accessible*** but potentially ***not addressable*** due to mitigating circumstances
			14.28		14.28	Local authority and outside advisors impasse; incompatible values lead to irreconcileable impasse	SHs VALUES influence and mediate approaches to interactions and willingness to cooperate; incompatible VALUES lead to irreconcileable differences and impasses	midway; INTERACTING>OVERRIDING; ***Origin / Focus / Motivated*** by SHs lack of agreement; ***Mediated*** by frames and lack of shared frames and mutually incompatible values: Potentially ***addressable*** via improved inter-stakeholder dialogue towards shared frames and inter-SH values understanding.
3	**Social**							
	Lack of agreement (incl. conflicting values/value frames)		14.25		14.25	Multiple, conflicting, priority-undifferentiated demands; Client's overriding demands consequentially lead to lack of want/interest/commitment in sustainability, ultimately influencing values-based decisions	VALUES-based decisions can precipitate overriding demands which are ultimately incompatible with sustainability	early-mid; UNDERPINNING values, create OVERRIDING decisions; ***Originates*** in and ***Motivated*** by CL values of human welfare; ***Focused*** on providing for human welfare; ***Mediated*** by overriding demands/conditions from compound confounding influences; ***Accessible*** but potentially ***not addressable*** due to mitigating circumstances
			14.27	14.27	14.27	PO/Planner's frame of 'Countryside Visual Impact (CVI)'; negative influence in problem framing	Planners VALUE-FRAME of CVI	early-mid; INTERACTING, LINKING, OVERRIDING; ***Originating*** in PO evaluation of visual impact of PVs in countryside; ***Motivated*** by responsibility/duty, and Natural England; ***Focus*** on and evaluations of relative impact of PVs in countryside; ***Mediated*** by POs interpretation/ judgement/ evaluation; Addressable via PO negotiation
			14.28		14.28	Local authority and outside advisors impasse; incompatible values lead to irreconcilable impasse	SHs VALUES influence and mediate approaches to interactions and willingness to cooperate; incompatible VALUES lead to irreconcileable differences and impasses	midway; INTERACTING>OVERRIDING; ***Origin / Focus / Motivated*** by SHs lack of agreement; ***Mediated*** by frames and lack of shared frames and mutually incompatible values: Potentially ***addressable*** via improved inter-stakeholder dialogue towards shared frames and inter-SH values understanding.
4	**PPT's Soc-Psy Cog-Mech**							
	PPT's preconceptions about, and interpretations related to, client and money		14.7	14.7	14.7	Value is placed on financial and cost frames by PPTs and SHs	Relative VALUE placed on money and financial frames influences subsequent moves / reflections and consequential frames / re-framing (cf, Schön)	early, throughout; THROUGHGOING: UNDERPINNING, INTERACTING, LINKED, OVERRIDING; ***Originating*** in the nature of construction as a cost-bearing human endeavour; ***Motivation*** to employ cost frame varies according to numerous interacting factors including practitioenr experience and skill in using other frames, client-type and experience, project type, and timing of the framing as to whether earlier or later in the design development and construction process when changes have cost implications.
	Managing own value-frames (i.e. efficiency-effectiveness, commitment, commercial awareness, understanding and communication, cost, etc.)		14.7	14.7	14.7	Value is placed on financial and cost frames by PPTs and SHs	Relative VALUE placed on money and financial frames influences subsequent moves / reflections and consequential frames / re-framing (cf, Schön)	early, throughout; THROUGHGOING: UNDERPINNING, INTERACTING, LINKED, OVERRIDING; ***Originating*** in the nature of construction as a cost-bearing human endeavour; ***Motivation*** to employ cost frame varies according to numerous interacting factors including practitioenr experience and skill in using other frames, client-type and experience, project type, and timing of the framing as to whether earlier or later in the design development and construction process when changes have cost implications.
7	**Others' Individual Psychological Processes / Influences**							
	Favourable and/or amenable attitudes and/or perspectives		14.28		14.28	Local authority and outside advisors impasse (CAS)	SHs VALUES influence and mediate approaches to interactions and willingness to cooperate; incompatible VALUES lead to irreconcileable differences and impasses	midway; INTERACTING>OVERRIDING; ***Origin / Focus / Motivated*** by SHs lack of agreement; ***Mediated*** by frames and lack of shared frames and mutually incompatible values: Potentially ***addressable*** via improved inter-stakeholder dialogue towards shared frames and inter-SH values understanding.
	Overriding demands, as multiple complex undifferentiated priorities, indicating conflicting values		14.25		14.25	Multiple, conflicting, priority-undifferentiated demands; Client's overriding demands consequentially lead to lack of want/interest/commitment in sustainability, ultimately influencing values-based decisions	VALUES-based decisions can precipitate overriding demands which are ultimately incompatible with sustainability	early-mid; UNDERPINNING values, create OVERRIDING decisions; ***Originates*** in and ***Motivated*** by CL values of human welfare; ***Focused*** on providing for human welfare; ***Mediated*** by overriding demands/conditions from compound confounding influences; ***Accessible*** but potentially ***not addressable*** due to mitigating circumstances
			14.27	14.27	14.27	PO/Planner's frame of 'Countryside Visual Impact (CVI)'; negative influence in problem framing	Planners VALUE-FRAME of CVI	early-mid; INTERACTING, LINKING, OVERRIDING; ***Originating*** in PO evaluation of visual impact of PVs in countryside; ***Motivated*** by responsibility/duty, and Natural England; ***Focus*** on and evaluations of relative impact of PVs in countryside; ***Mediated*** by POs interpretation/ judgement/ evaluation; Addressable via PO negotiation
			14.28		14.28	Local authority and outside advisors impasse (CAS)	SHs VALUES influence and mediate approaches to interactions and willingness to cooperate; incompatible VALUES lead to irreconcileable differences and impasses	midway; INTERACTING>OVERRIDING; ***Origin / Focus / Motivated*** by SHs lack of agreement; ***Mediated*** by frames and lack of shared frames and mutually incompatible values: Potentially ***addressable*** via improved inter-stakeholder dialogue towards shared frames and inter-SH values understanding.
	Understanding and communicating benefits, advantages, disadvantages			14.23	14.23	Cost-benefit analysis and CapEx/LCC framing	VALUES dimensions present and influencing interpretations of short/long-term benefits as MEDIATORS, or MODERATORS.	early-mid then runs throughout; INTERACTING, LINKING; ***Originates*** in client's request for cost-benefit analysis; ***Focused*** on long-term and short-term cost; ***Motivated*** by cost-benefit analysis; Mediated by interpretation of short/long-term benefits; ***Addressable*** through frames used for communicating the CBA
	Managing others' value-frames (i.e. cost, CapEx-LCC, CVI) aligning with broader long-term sustainability goals			14.23	14.23	Cost-benefit analysis and CapEx/LCC framing	VALUES dimensions present and influencing interpretations of short/long-term benefits as MEDIATORS, or MODERATORS.	early-mid then runs throughout; INTERACTING, LINKING; ***Originates*** in client's request for cost-benefit analysis; ***Focused*** on long-term and short-term cost; ***Motivated*** by cost-benefit analysis; Mediated by interpretation of short/long-term benefits; ***Addressable*** through frames used for communicating the CBA
			14.27	14.27	14.27	PO/Planner's frame of 'Countryside Visual Impact (CVI)'; negative influence in problem framing	Planners VALUE-FRAME of CVI	early-mid; INTERACTING, LINKING, OVERRIDING; ***Originating*** in PO evaluation of visual impact of PVs in countryside; ***Motivated*** by responsibility/duty, and Natural England; ***Focus*** on and evaluations of relative impact of PVs in countryside; ***Mediated*** by POs interpretation/ judgement/ evaluation; Addressable via PO negotiation



1a Thematic Concept Map/Diagram: Simplified Concept map showing the Framing Process as a part of both sensemaking and relationship-building

Thematic Concept Map/ Diagram:
Broad conceptualisation of a First/Initial Interaction Space where an initial sense-making process is begun as an 'interactive evaluation process' (see detail on page)

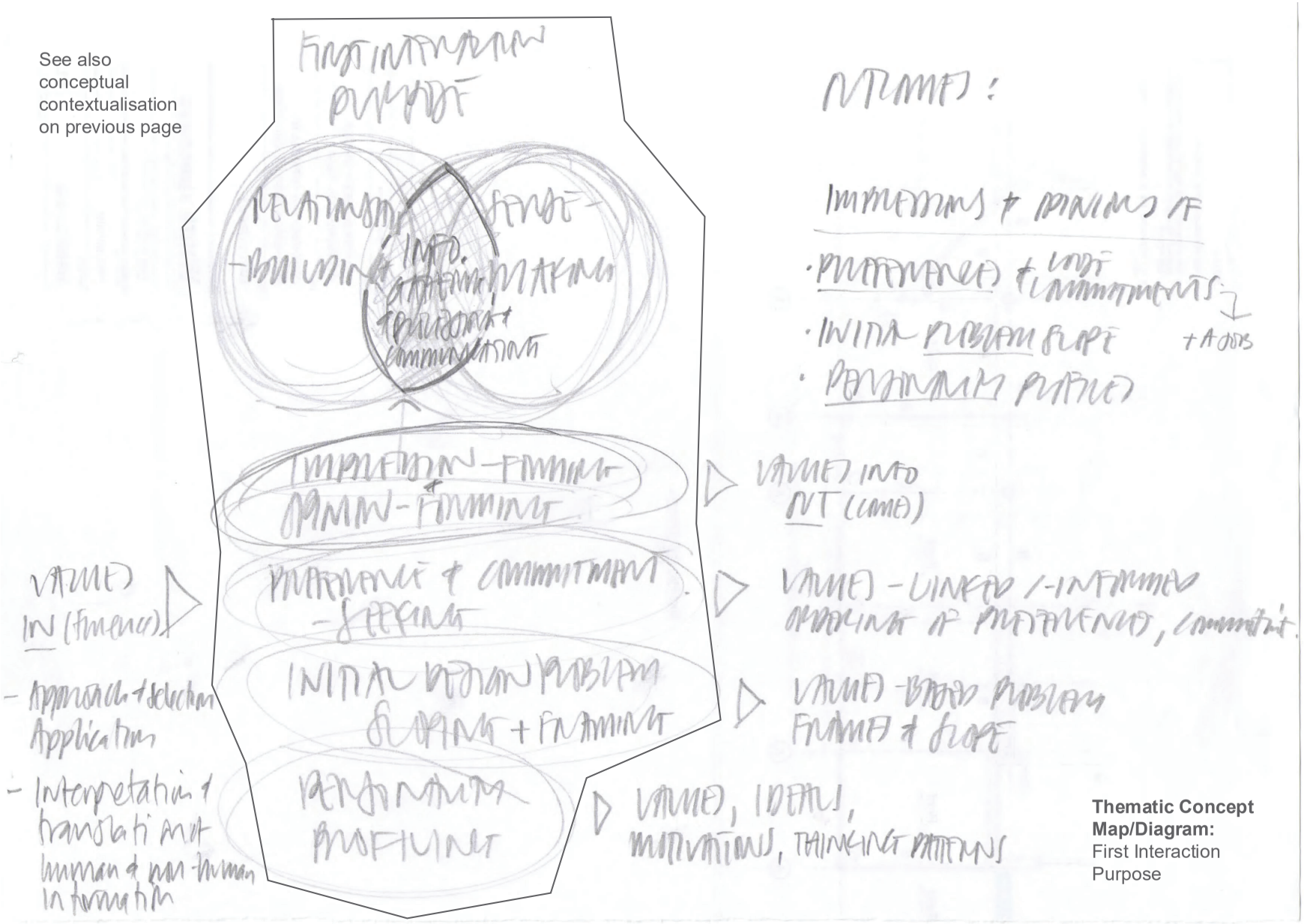




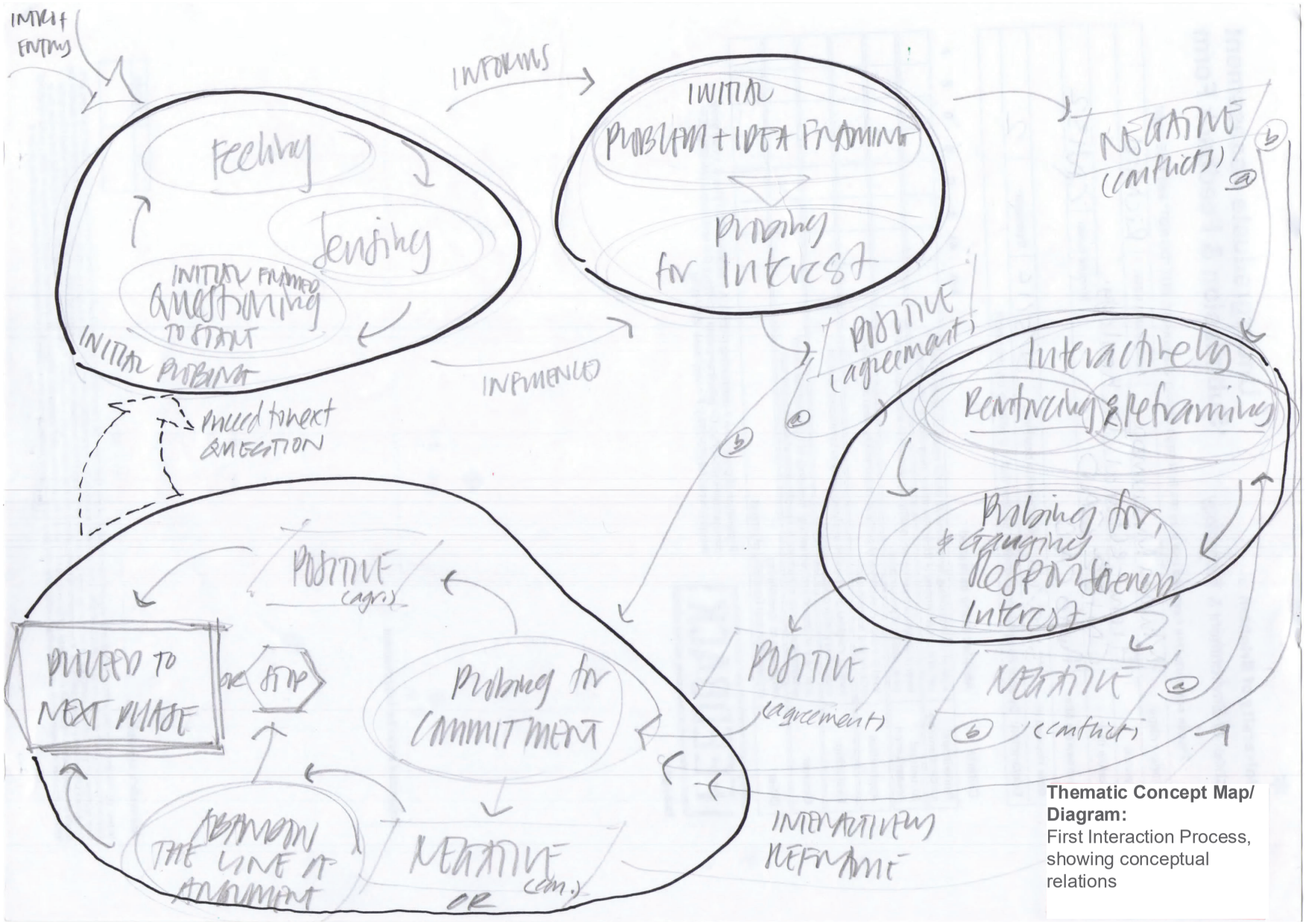
See Detail Extract on next page

Thematic Concept Map/ Diagram:
First Interaction Space where an initial sense-making and relationship-building process is begun as an 'interactive evaluation process' (see previous page)

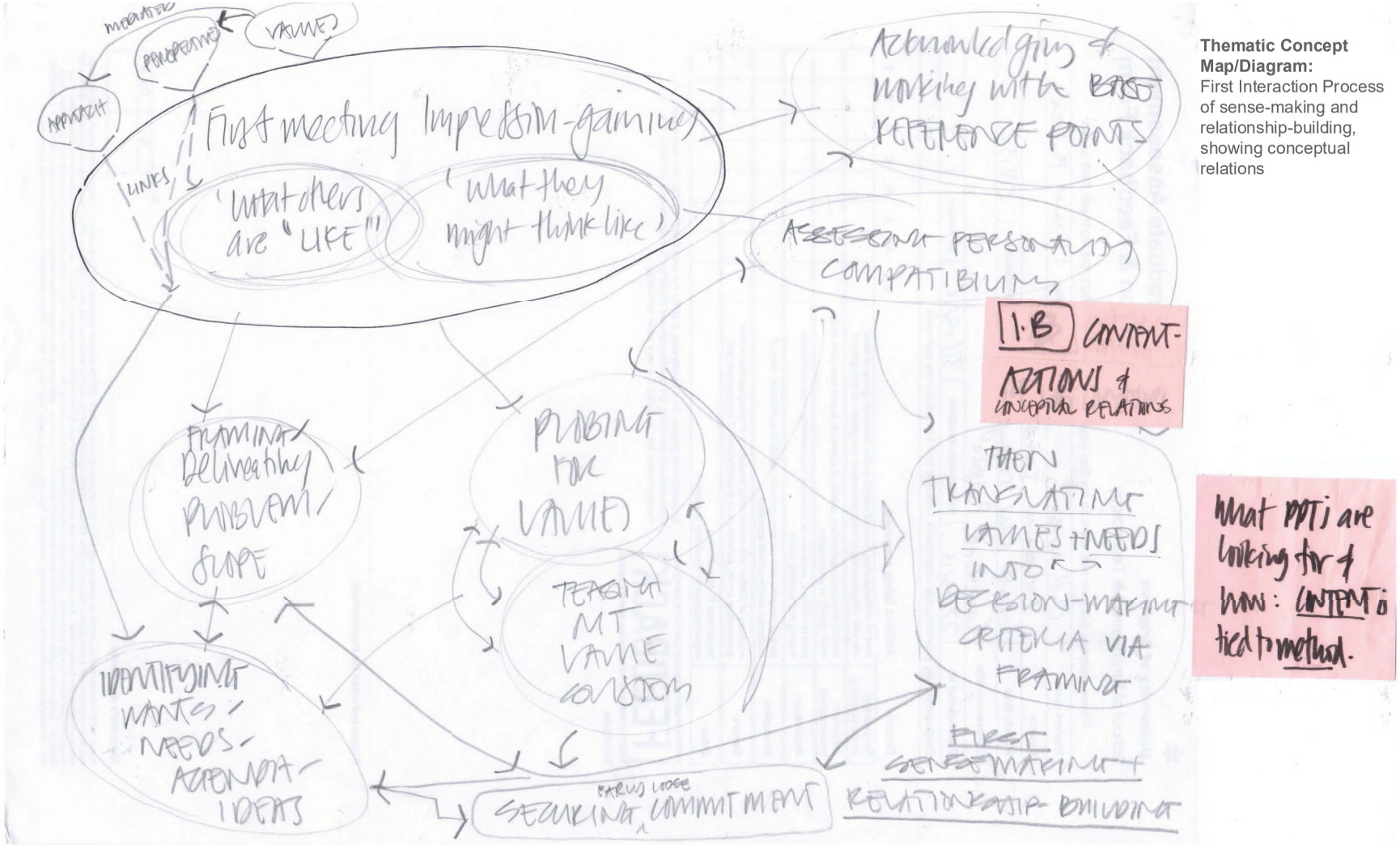
See also conceptual contextualisation on previous page



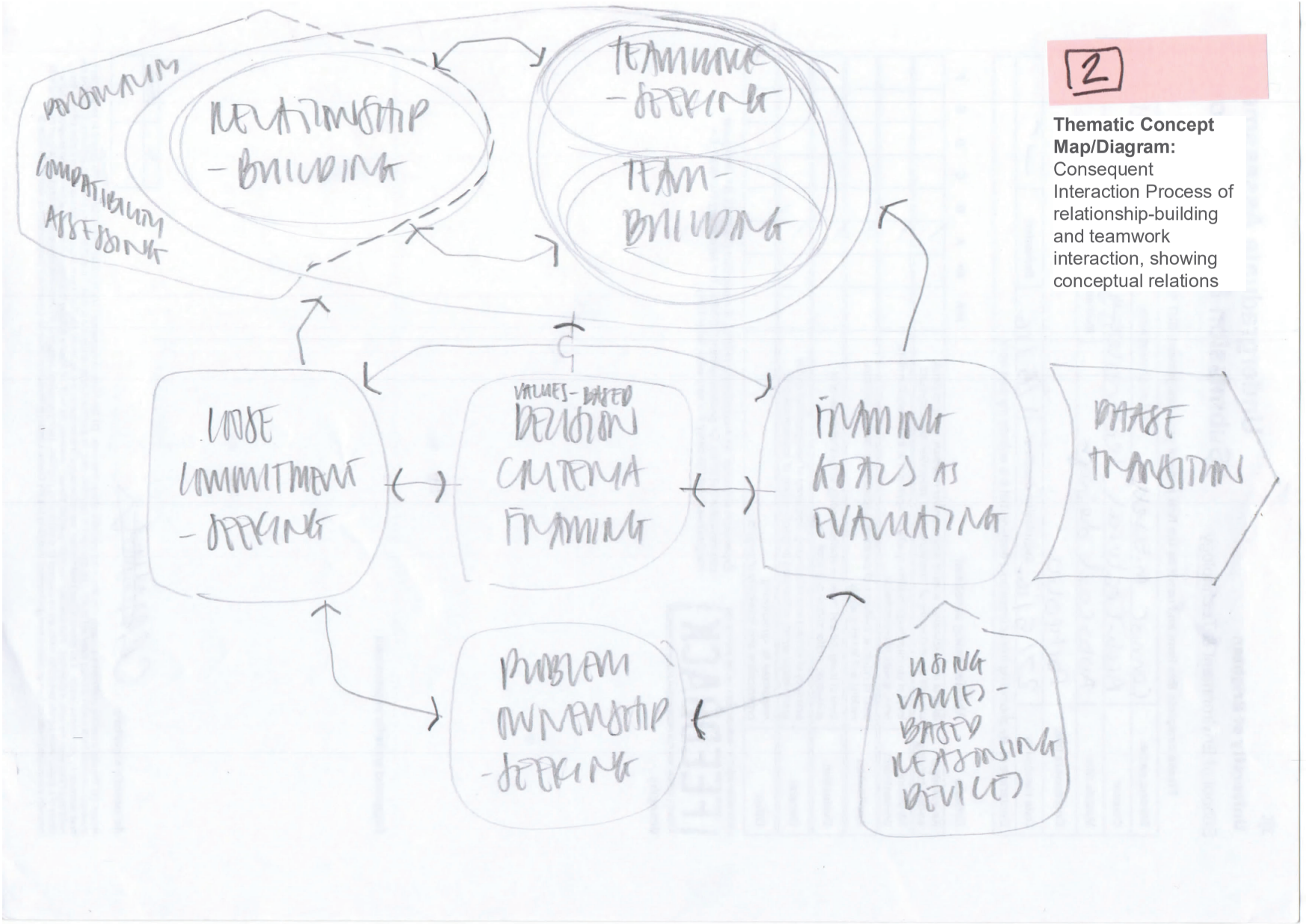
Thematic Concept Map/Diagram: First Interaction Purpose



Thematic Concept Map/ Diagram:
First Interaction Process, showing conceptual relations



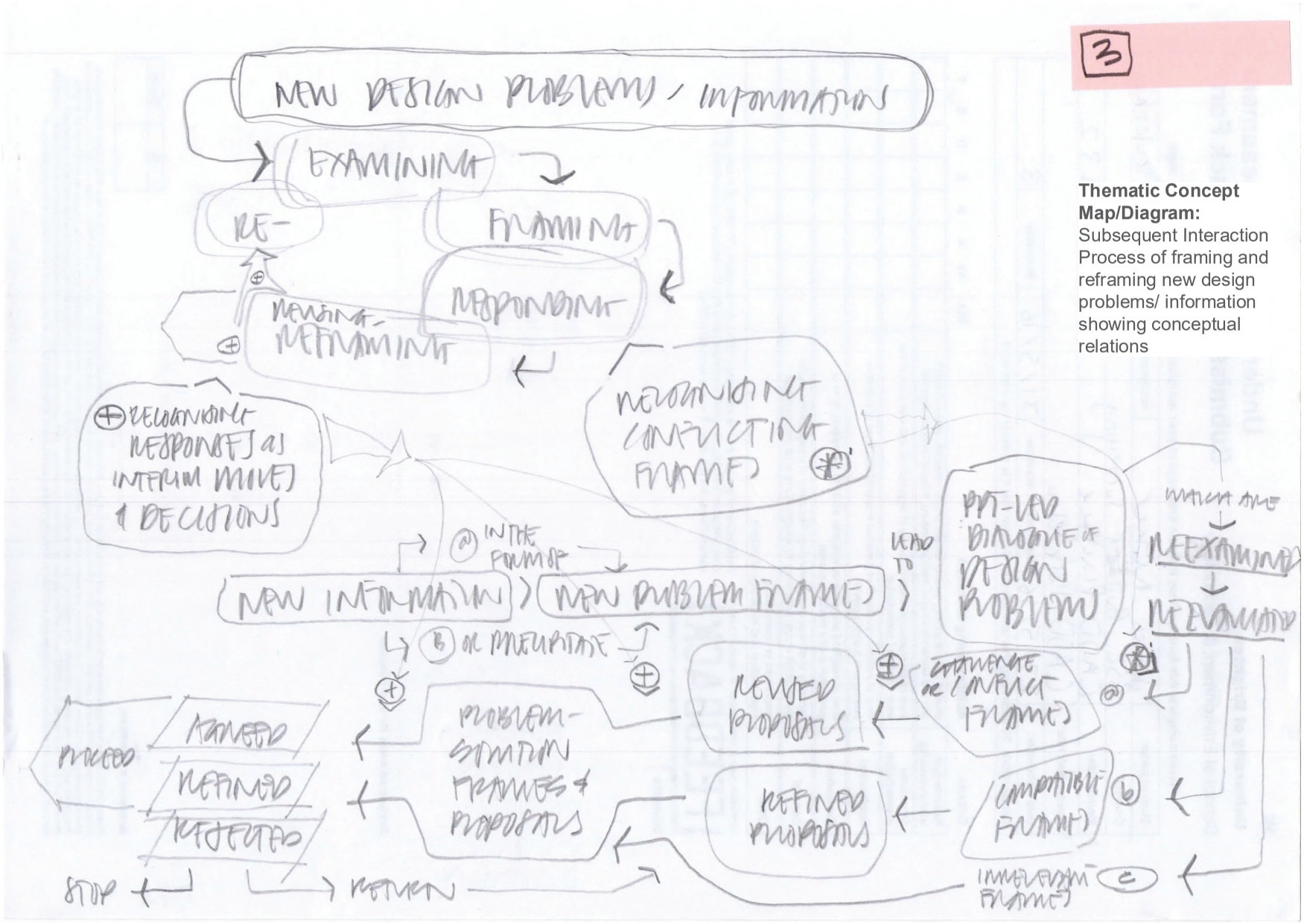
Thematic Concept Map/Diagram: First Interaction Process of sense-making and relationship-building, showing conceptual relations



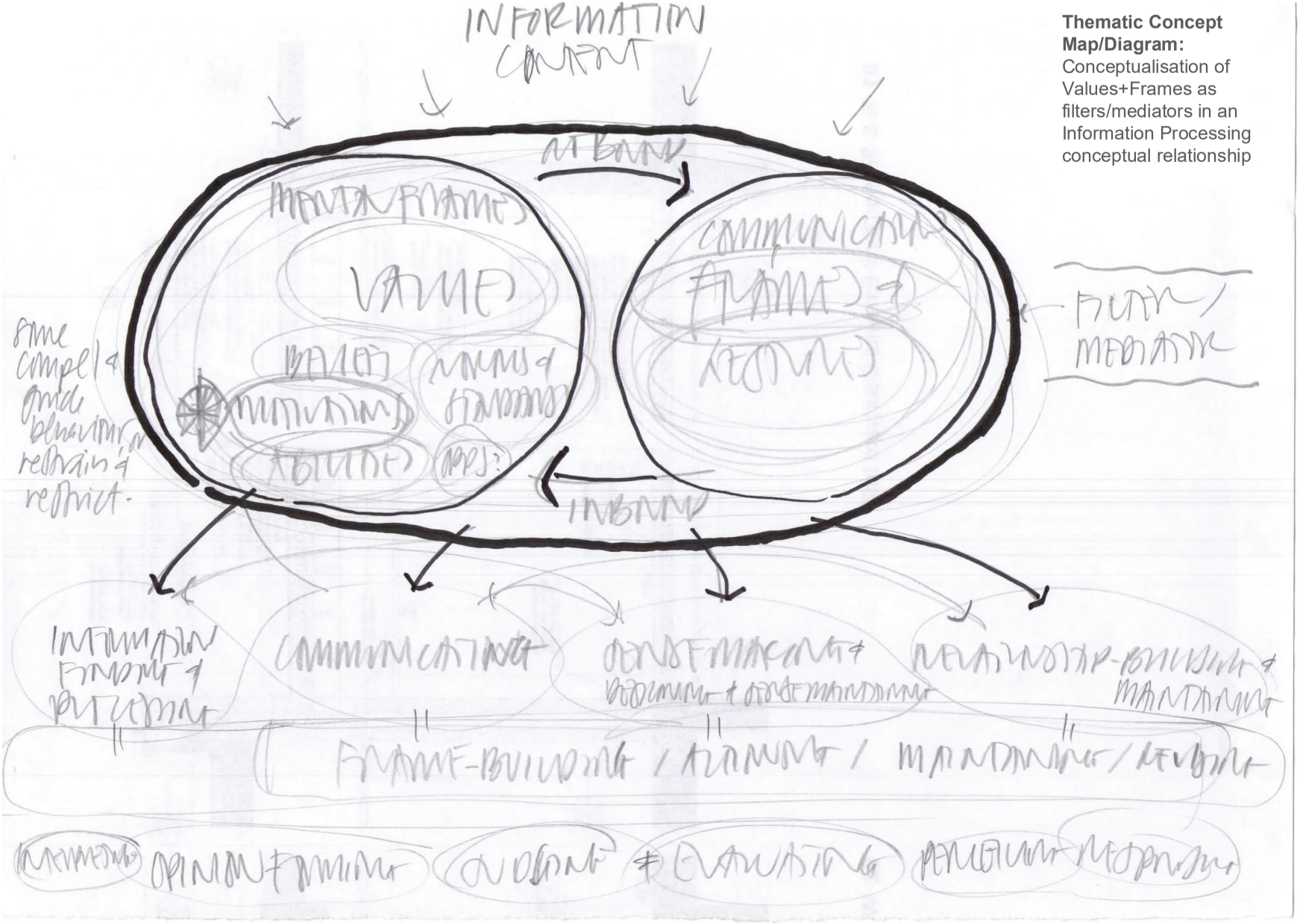
2

Thematic Concept Map/Diagram: Consequent Interaction Process of relationship-building and teamwork interaction, showing conceptual relations

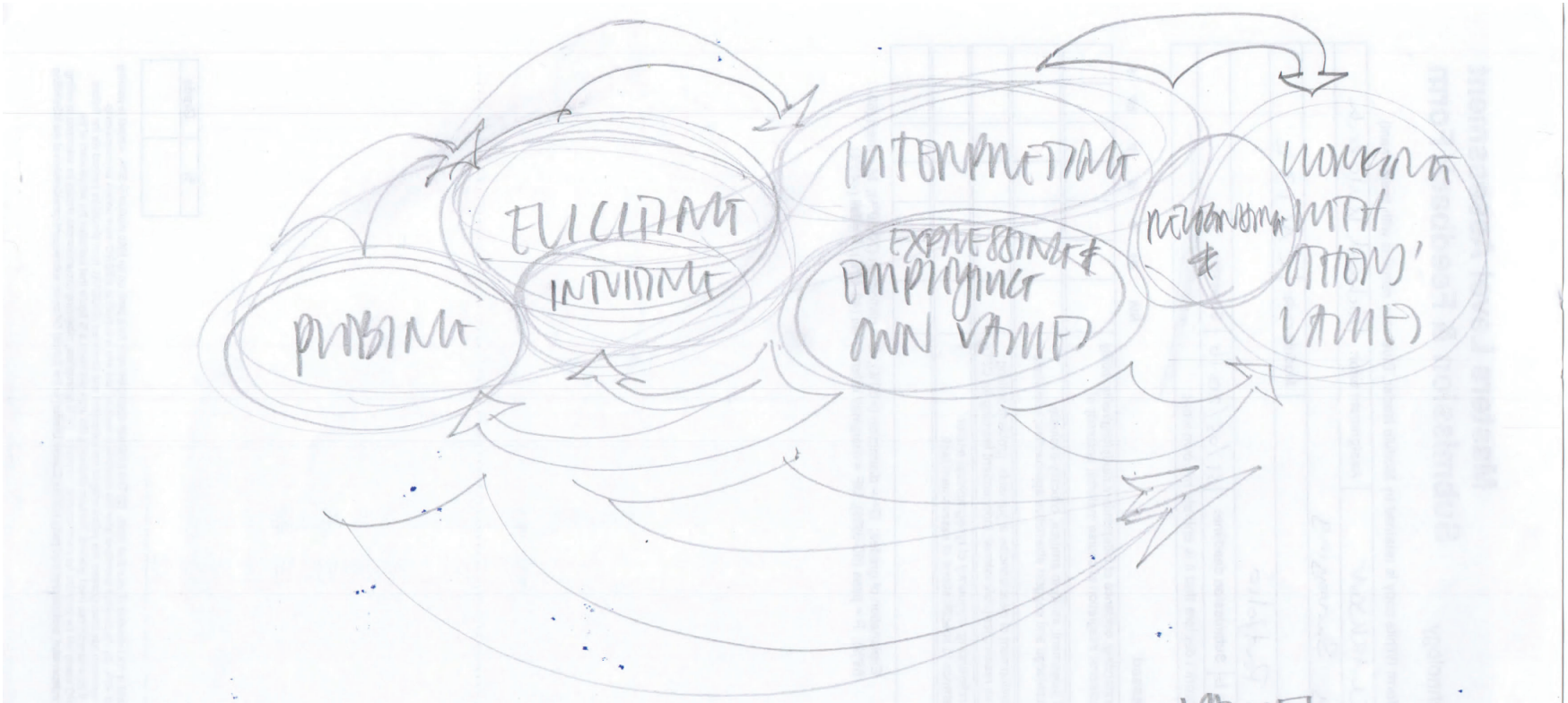
3



Thematic Concept Map/Diagram: Subsequent Interaction Process of framing and reframing new design problems/ information showing conceptual relations

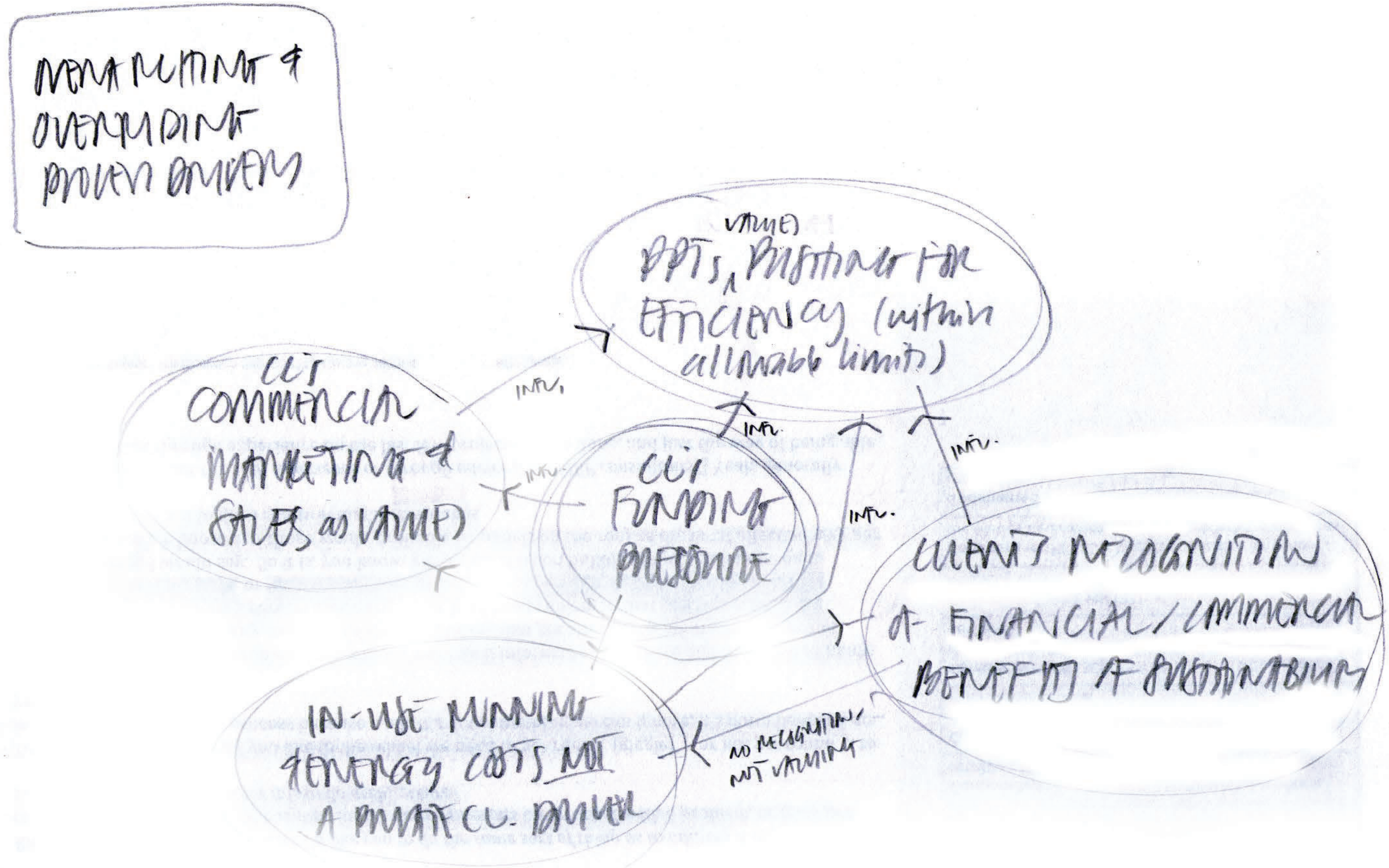


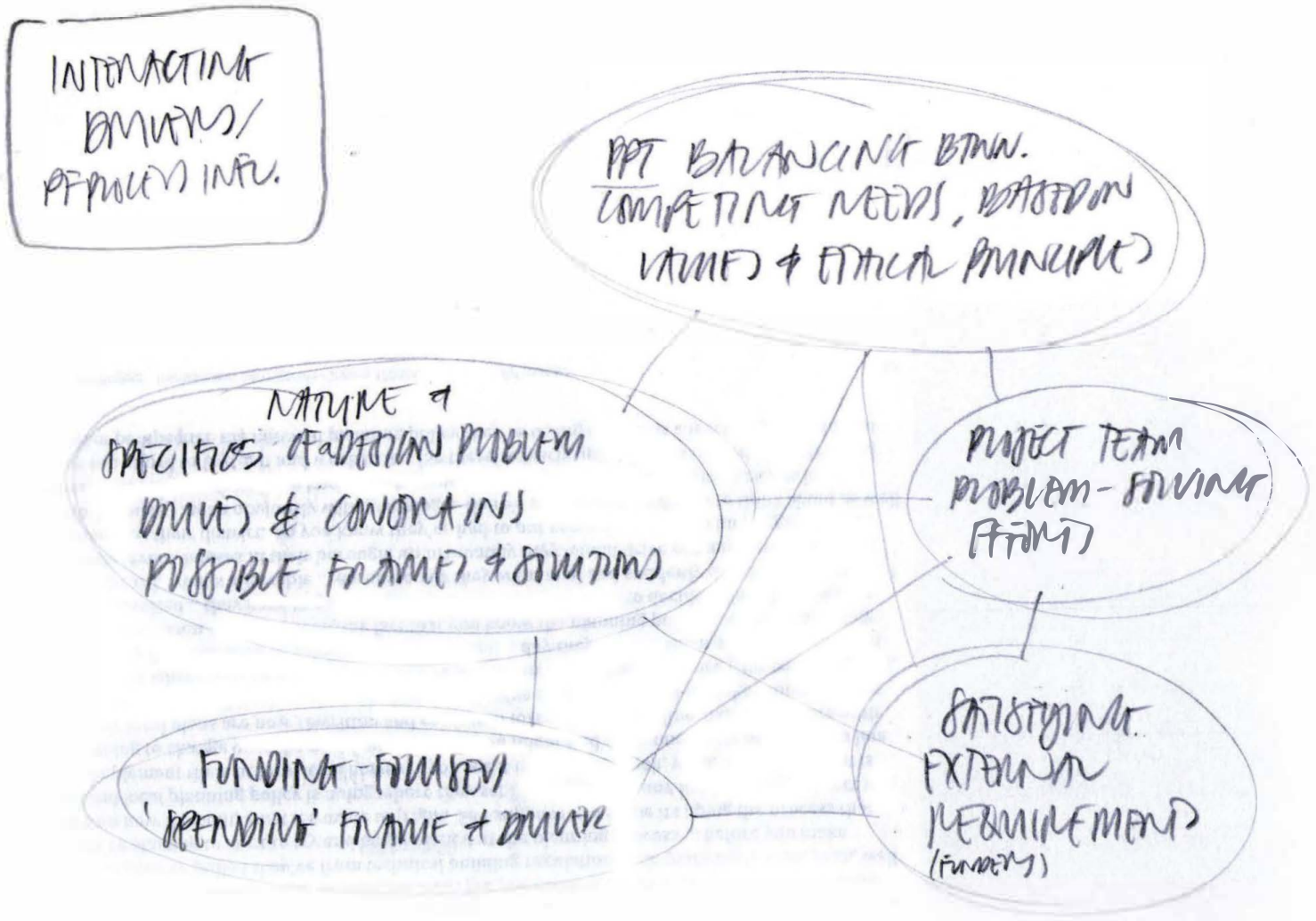
Thematic Concept Map/Diagram: Conceptualisation of Values+Frames as filters/mediators in an Information Processing conceptual relationship



VALUES
INTER/ACTION
MECHANISMS /
PROCESSES.

Thematic Concept Map/ Diagram:
Conceptual relations of values interaction mechanisms/processes


RENEGOTIATING & OVERRIDING PROJECT DRIVERS
CCI COMMERCIAL MARKETING & SALES AS VALUED
OPTs, VALUED POSITIONS FOR EFFICIENCY (within allowable limits)
CCI FUNDING PRESSURE
IN-USE RUNNING & ENERGY COSTS NOT A PRIVATE CL. DRIVER
CLIENT'S RECOGNITION OF FINANCIAL/COMMERCIAL BENEFITS OF SUSTAINABILITY
INFL.
NO RECOGNITION/ NOT VALUING


INTERACTING DRIVERS/ PERSPECTIVES INFL.
PPT BALANCING BTWN. COMPETING NEEDS, PERCEPTIONS VALUES & ETHICAL PRINCIPLES
NATURE & SPECIFICS OF ADDICTION PROBLEM DRIVES & CONSTRAINS POSSIBLE FRAMES & SOLUTIONS
PROJECT TEAM PROBLEM-SOLVING EFFORTS
FUNDING-FOCUSED 'SPENDING' FRAME & DRIVER
SATISFYING EXTERNAL REQUIREMENTS (FUNDERS)

VALUE FRAMES

INFLUENCE

- CAPEX / LCC VALUE FRAMES; 14.22 (V)
  the infl. of value-perceptions & value-holders on bus. frames
- beneficial use, V-F (benefits & advantages) 14.9
- cost-related VFs 14.6 13.5
- commercial awareness / impact VF.
- commitment V-F
- efficiency / effectiveness V-F 14.2/14
- CM / impact value-frames 14.27
- costs of value VF on ...
- responsibility V-F 13.9 (environmental influence)
- ethics / ethical V-F 13.10
- relative importance / value of bus. 13.10

NOTHING MATTERS — ONLY I MATTER — ONLY THOSE CLOSE TO ME MATTER — EVERYONE MATTERS (BECAUSE THEY ARE CONNECTED TO ME) — EVERYONE MATTERS EQUALLY INCL. OTHERS ME

INFLUENCE MAPPING THEMATIC MAPPING

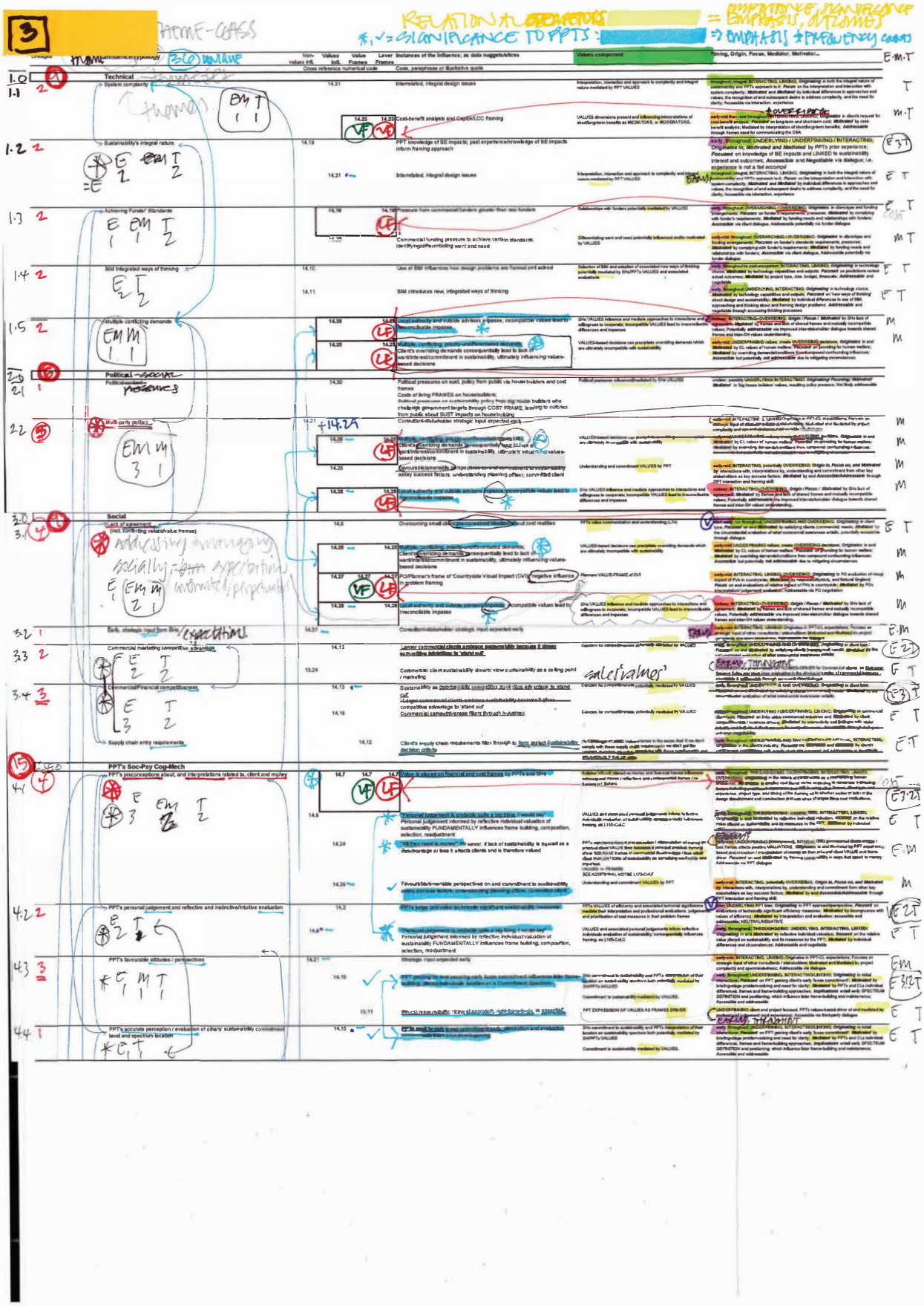
TECHNICAL / MGT
- system complexity; 14.31 (V) (14.23 V)
- sustainability's integral nature 14.19 14.31 (V)
- achieving funder's standards 14.18 (V) 14.20 (V) (LF)
- BIM integrated ways of thinking 14.10-11
- multiple conflicting demands (LF) 14.20, 14.25 (V)

ORGANISATIONAL / MGT
- lack of agreement (conflicting values / value frames) 14.28 14.25 14.27 14.6 (LF)
- strategic input from others 14.21
- competitiveness / marketing 14.13
- commerciality / competitive / financial 14.13 14.16
- emphasis on ... 14.12 14.15
- managing others' CV (capex-LCC value-frames) aligned with broader preconceptions / long-term goals... 14.22
- managing idealism, pragmatically 14.4 14.16 14.17
- others' attitudes to bus. 14.29 — pre-conceived / pre-existing 14.26 (V)

INDIVIDUAL / SOC-PSY
- (self) cog-mech.
- preconceptions (PPS) about client + money + interpretation related to it
- personal judgements reflective ... 14.5 (V) 14.20 (V)
- favourable attitudes / perspectives
- evaluating others' commitment levels ... 14.15 (V)
- cog-mech

POLITICAL
- political context 14.30 (V)
  multi-party politics / mgt.
  individual 14.21 14.2 14.20 14.28
- PSYCHOLOGICAL (...)
- favourable and/or ... attitudes & perspectives on bus.
- gaining & retaining commitment to bus.
- differentiating identifying wants / needs
- client experience 14.17
- overriding demands (LF) multiple, complex, undifferentiated
- pre-conceptions & idealism
- prior knowledge
- BIM / integrated ways of thinking 14.10-11
- communicating + understanding benefits, advantages, disadvantages 14.9 14.13
- managing BIM (efficiency, effectiveness) value-frames
  understanding communication, effort, commitment, understanding benefits & advantages
- changing attitudes 14.29 (V)

(*) Sustainability as a self-others value / concern spectrum / commitment



+ COLLABORATION + TEAMWORK

Ref	Theme / Influence	Code	Code	Code	Data description	Values	Characterisation
4.5 (5)	Managing own value-frames (i.e. efficiency-effectiveness, commitment, commercial awareness, understanding and communication, cost, etc.)	14.2			PPTs judges and values technically significant sustainability measures	PPTs VALUES of efficiency and associated technical significance mediate their interpretation and professional evaluations, judgements, and prioritisation of sust measures in their problem frames	prior; UNDERLYING PPT bias; Originating in PPT approach/perspective; Focused on evaluations of technically significant efficiency measures; Motivated by incongruence with values of efficiency; Mediated by interpretation and evaluation; accessible and addressable; NEUTRAL/NEGATIVE
		14.28			PPTs value frames of understanding and communication: Favourable/amenable perspectives on and commitment to sustainability askey success factors: understanding planning officer, committed client	Understanding and commitment VALUED by PPT	early-mid: INTERACTING, potentially OVERRIDING; Origin in, Focus on, and Motivated by interactions with, interpretations by, understanding and commitment from other key stakeholders as key success factors; Mediated by and Accessible/Addressable through PPT interaction and framing skill;
		14.7	14.7	14.7	Value is placed on financial and cost frames by PPTs and SHs	[illegible]	early, throughout; THROUGHGOING: UNDERPINNING, INTERACTING, LINKED, OVERRIDING; Originating in the nature of construction as a cost-bearing human endeavour; Motivation to employ cost frame varies according to numerous interacting factors including practitioner experience and skill in using other frames, client-type and experience, project type, and timing of the framing as to whether earlier or later in the design development and construction process when changes have cost implications.
		14.15			[illegible] influences later frame-building, places individuals' location on a Commitment Spectrum	[illegible] SH/PPTs VALUES; Commitment to [illegible] VALUES	[illegible]
			14.22		PPTs Efficiency = effectiveness value-frames	[illegible] VALUES, interpretation, judgement	Early-mid, [illegible] INTERACTING, LINKING; [illegible] on PPT individual evaluations of SustMeasures; [illegible] Addressable via PPT dialogue (third-party)
5.0 (21)	STAKEHOLDERS ~~Others'~~ Individual Psychological Processes / Influences						
5.1 2	Client Experience; Others' prior knowledge / experience	13.4			As driver, UNDERLYING, Commercial client's past experience knowing/understanding their drivers	NA	UNDERLYING [illegible] externally and internally motivated, partly accessible through experiential knowledge and potentially dialogue
		14.17			Client experience a major influence on sustainability interest and outcomes	NA	early, throughout UNDERLYING / UNDERPINNING / INTERACTING; Originates in, Motivated and Mediated by client's prior experience; Focused on sustainability interest and outcomes; Accessible via dialogue, non-negotiable yet potentially Addressable via dialogue; i.e. experience is not a fait accompli
5.2 (4)	Favourable and/or amenable attitudes and/or perspectives	14.5			Commercial clients' needs demand commercial awareness, well-designed delivery, and frames that speak to it; recognition of it is POSITIVE	VALUES also manifest in architecture projects as prioritised NEEDS precipitating circumstantial evaluations of clients' needs and the extent of "commercial awareness".	start early, run throughout; UNDERPINNING AND OVERRIDING; Originating in client type; Focused on and Motivated by satisfying clients (commercial) needs; Mediated by the circumstantial evaluation of what commercial awareness entails;
		14.26			Favourable/amenable perspectives on and commitment to sustainability askey success factors: understanding planning officer, committed client	Understanding and commitment VALUED by PPT	early-mid: INTERACTING, potentially OVERRIDING; Origin in, Focus on, and Motivated by interactions with, interpretations by, understanding and commitment from other key stakeholders as key success factors; Mediated by and Accessible/Addressable through PPT interaction and framing skill;
		14.28		14.28	Local authority and outside advisors impasse (CAS)	SHs VALUES influence and mediate approaches to interactions and willingness to cooperate; incompatible VALUES lead to irreconcilable differences and impasses	midway; INTERACTING>OVERRIDING; Origin / Focus / Motivated by SHs lack of agreement; Mediated by frames and lack of shared frames and mutually incompatible values; Potentially addressable via improved inter-stakeholder dialogue towards shared frames and inter-SH values understanding.
		14.29			Change in Stakeholder's (EH) attitudes toward modernisation as conservation versus preservation	SHs values of preservation trumped any views of pragmatism or realism, placing them at odds or incompatible with PPT and CL's VALUES	unclear, presumably early-mid; INTERACTING (SH attitudes>SH advice/evaluations), LINKING (modernity and conservation); Origin / Focus / Motivation / Mediated in/by SHs limited interpretations of conservation as preservation: also Mediated by PPT-CL interpretations and frames; Addressable potentially via SH dialogue
5.3 2	Commitment to sustainability; gaining early and retaining	14.4	14.4		"Evangelical" client's NEW FRAME/VALUE OF COMMITMENT moderates, and perhaps even trumps Cost frames	CLs VALUES-based commitment precipitates interpretations and subsequent problem frames of challenges such as cost which are informed by those underpinning values. The extent to which the values are held is evident in their capacity to facilitate OVERRIDING frames in the face of challenge.	very early, throughout; UNDERPINNING, OVERRIDING; Originating in, Motivated and Mediated by values-based (evangelical) commitment; Focused on interpreting costs as hurdles vs. barriers.
		14.15			PPT probing for and securing early loose commitment influences later frame-building; places individuals' location on a Commitment Spectrum	SHs commitment to sustainability and PPTs interpretation of their location on sustainability spectrum both potentially mediated by SH/PPTs VALUES. Commitment to sustainability mediated by VALUES.	early, throughout; UNDERPINNING, INTERACTING/LINKING; Originating in initial interactions; Focused on PPT gaining client's early 'loose commitment'; Motivated by briefing-stage problem-solving and need for clarity; Mediated by PPTs and CLs individual differences, frames and frame-building approaches; Implications entail early SPECTRUM DEFINITION and positioning, which influence later frame-building and maintenance; Accessible and addressable
5.4 2	Identifying and differentiating wants and needs	14.5			Commercial clients' needs demand commercial awareness, well-designed delivery, and frames that speak to it; recognition of it is POSITIVE	VALUES also manifest in architecture projects as prioritised NEEDS precipitating circumstantial evaluations of clients' needs and the extent of "commercial awareness".	start early, run throughout; UNDERPINNING AND OVERRIDING; Originating in client type; Focused on and Motivated by satisfying clients (commercial) needs; Mediated by the circumstantial evaluation of what commercial awareness entails;
		14.20			Commercial funding pressure to achieve certain standards; identifying/differentiating want and need	Differentiating want and need potentially influenced and/or motivated by VALUES	early-mid, throughout; OVERARCHING / OVERRIDING; Originates in client-type and funding arrangements; Focuses on funder's standards requirements, pressures; Motivated by complying with funder's requirements; Mediated by funding needs and relationships with funders; Accessible via client dialogue, Addressable potentially via funder dialogue
5.5 3	Overriding demands, as multiple complex undifferentiated priorities, indicating conflicting values	14.25		14.25	Multiple, conflicting, priority-undifferentiated demands; Client's overriding demands consequentially lead to lack of want/interest/commitment in sustainability, ultimately influencing values-based decisions	VALUES-based decisions [illegible] precipitate overriding demands which are ultimately incompatible with sustainability	early-mid; UNDERPINNING values, create OVERRIDING decisions; Originates in and Motivated by CL values of human welfare; Focused on providing for human welfare; Mediated by overriding demands/conditions from compound confounding influences; Accessible but potentially not addressable due to mitigating circumstances
		14.27	14.27	14.27	PO/Planner's frame of 'Countryside Visual Impact (CVI)'; negative influence in problem framing	Planners VALUE-FRAME of CVI	early-mid: INTERACTING, LINKING, OVERRIDING; Originating in PO evaluation of visual impact of PVs in countryside; Motivated by responsibility/duty, and Natural England; Focus on and evaluations of relative impact of PVs in countryside; Mediated by POs interpretation/ judgement/ evaluation; Addressable via PO negotiation
		14.28		14.28	Local authority and outside advisors impasse (CAS)	SHs VALUES influence and mediate approaches to interactions and willingness to cooperate; incompatible VALUES lead to irreconcilable differences and impasses	midway; INTERACTING>OVERRIDING; Origin / Focus / Motivated by SHs lack of agreement; Mediated by frames and lack of shared frames and mutually incompatible values; Potentially addressable via improved inter-stakeholder dialogue towards shared frames and inter-SH values understanding.
5.6 (4)	Understanding and communicating benefits, advantages, disadvantages	14.9	14.9		larger clients "understand that good, sustainable design is a benefit". Client-type and size influence on the PF, positive; understanding the benefits, advantages	Client-type and size influence the use of "commercially beneficial" value-frames because they value commercial benefit	early, throughout; UNDERLYING, INTERACTING; Originates in client-type as a financially-orientated/driven entity and individual differences in perception and/or interpretation of sustainability/design; Motivated by the benefits accrued; Mediated by individual differences in perception/interpretation of sustainability/design; Addressable
		14.13			Larger commercial clients embrace sustainability because it gives competitive advantage to 'stand out'	Concern for competitiveness potentially mediated by VALUES	early, throughout; UNDERPINNING AND OVERRIDING; Originating in client type; Focused on and Motivated by satisfying clients (commercial) needs; Mediated by the circumstantial evaluation of what commercial awareness entails;
		14.14			Small clients not disadvantaged by lack of sustainability		
			14.23	14.23	Cost-benefit analysis and CapEx/LCC framing	VALUES dimensions present and influencing interpretations of short/long-term benefits as MEDIATORS, or MODERATORS.	early-mid then runs throughout; INTERACTING, LINKING; Originates in client's request for cost-benefit analysis; Focused on long-term and short-term cost; Motivated by cost-benefit analysis; Mediated by interpretation of short/long-term benefits; Addressable through frames used for communicating the CBA
5.7 3	Idealism, preconceptions recognised, acknowledged, pragmatically managed	14.4	14.4		"Evangelical" client's VALUE/FRAME OF COMMITMENT moderates, and perhaps even trumps Cost frames	CLs VALUES-based commitment precipitates interpretations and subsequent problem frames of challenges such as cost which are informed by those underpinning values. The extent to which the values are held is evident in their capacity to facilitate OVERRIDING frames in the face of challenge.	very early, throughout; UNDERPINNING, OVERRIDING; Originating in, Motivated and Mediated by values-based (evangelical) commitment; Focused on interpreting costs as hurdles vs. barriers.
		14.6			Overcoming small private client PRECONCEIVED IDEALISM versus REALITY of sust costs	SHs VALUES-based idealistic preconceptions interpreted by PPT as something to be overcome in relation to cost realities	start early, run throughout; UNDERPINNING AND OVERRIDING; Originating in client type; Focused on and Motivated by satisfying clients (commercial) needs; Mediated by the circumstantial evaluation of what commercial awareness entails; potentially accessible through dialogue
		14.17			Client experience a major influence on sustainability interest and outcomes	NA	early, throughout; UNDERLYING / UNDERPINNING / INTERACTING; Originates in, Motivated and Mediated by client's prior experience; Focused on sustainability interest and outcomes; Accessible via dialogue, non-negotiable yet potentially Addressable via dialogue; i.e. experience is not a fait accompli
5.8 2	Others pre-conceived or pre-existing attitudes to sustainability	14.26			Favourable/amenable perspectives on and commitment to sustainability askey success factors: understanding planning officer, committed client	Understanding and commitment VALUED by PPT	early-mid: INTERACTING, potentially OVERRIDING; Origin in, Focus on, and Motivated by interactions with, interpretations by, understanding and commitment from other key stakeholders as key success factors; Mediated by and Accessible/Addressable through PPT interaction and framing skill;
		14.29			Change in Stakeholder's (EH) attitudes toward modernisation as conservation [illegible] preservation	SHs values of preservation trumped any views of pragmatism or realism, placing them at odds or incompatible with PPT and CL's VALUES	unclear, presumably early-mid; INTERACTING (SH attitudes>SH advice/evaluations), LINKING (modernity and conservation); Origin / Focus / Motivation / Mediated in/by SHs limited interpretations of conservation as preservation: also Mediated by PPT-CL interpretations and frames; Addressable potentially via SH dialogue
5.9 (7)	Managing others' value-frames (i.e. cost, CapEx-LCC, CVI) aligning with broader long-term sustainability goals		14.23	14.23	Cost-benefit analysis and CapEx/LCC framing	VALUES dimensions present and influencing interpretations of short/long-term benefits as MEDIATORS, or MODERATORS.	early-mid then runs throughout; INTERACTING, LINKING; Originates in client's request for cost-benefit analysis; Focused on long-term and short-term cost; Motivated by cost-benefit analysis; Mediated by interpretation of short/long-term benefits; Addressable through frames used for communicating the CBA
			14.12		Client's supply chain requirements [illegible] through to form project sustainability decision criteria	[illegible]	early, throughout; UNDERPINNING AND OVERRIDING/OVERARCHING, INTERACTING; Originates in the client's industry; Focuses on, Motivated and Mediated by client's contractual compliance with supply chain requirements; not addressable or negotiable
		14.27	14.27	14.27	PO/Planner's frame of 'Countryside Visual Impact (CVI)'; negative influence in problem framing	Planners VALUE-FRAME of CVI	early-mid; INTERACTING, [illegible]; Originating in PO evaluation of visual impact of PVs in countryside; [illegible], and Natural England; Focus on and evaluations of relative impact of PVs in countryside; [illegible] by POs interpretation/ judgement/ evaluation; Addressable via PO negotiation
			14.30		Costs of living FRAMING on housebuilders: Political pressures on sustainability policy from big house builders who challenge government targets through COST FRAME, leading to outcries from public about SUST impacts on housebuilding	Political pressures [illegible] by SHs VALUES	[illegible] UNDERLYING/ INTERACTING? [illegible] in big house builders' values, resulting policy pressures [illegible]
			[illegible]		[illegible]	PPT [illegible] OF CL VALUES AS FRAMES DRIVER	EARLY UNDERPINNING client driver: Responsibility as a driving value for Third sector clients; based on and motivated by fundamental, pre-existing client philosophical principles; accessible through dialogue, mediated by religious faith, likely non-negotiable
			3.11		Ethical responsibility: Ethical approach, right-thing-to-do, is essential	PPT EXPRESSION OF VALUES AS FRAMES DRIVER	UNDERPINNING client and project focused, PPTs values-based driver of and mediated by professional judgement (and experience); Accessible via third-party dialogue
			3.10		Relative importance / value of sustainability: Small private client #sustainability drivers: idealism and values: How important is sustainability to me?	PPT ELICITATION OF CL VALUES AS FRAMES DRIVER	UNDERPINNING client driver; early-mid; Principles originating as idealism and values, motivating private clients; focused on relative importance of sustainability measures; accessible & addressible through dialogue;
5.10 1	Changing attitudes	14.29			Change in Stakeholder's (EH) attitudes toward modernisation as conservation versus preservation	SHs values of preservation trumped any views of pragmatism or realism, placing them at odds or incompatible with PPT and CL's VALUES	unclear, presumably early-mid; INTERACTING (SH attitudes>SH advice/evaluations), LINKING (modernity and conservation); Origin / Focus / Motivation / Mediated in/by SHs limited interpretations of conservation as preservation: also Mediated by PPT-CL interpretations and frames; Addressable potentially via SH dialogue

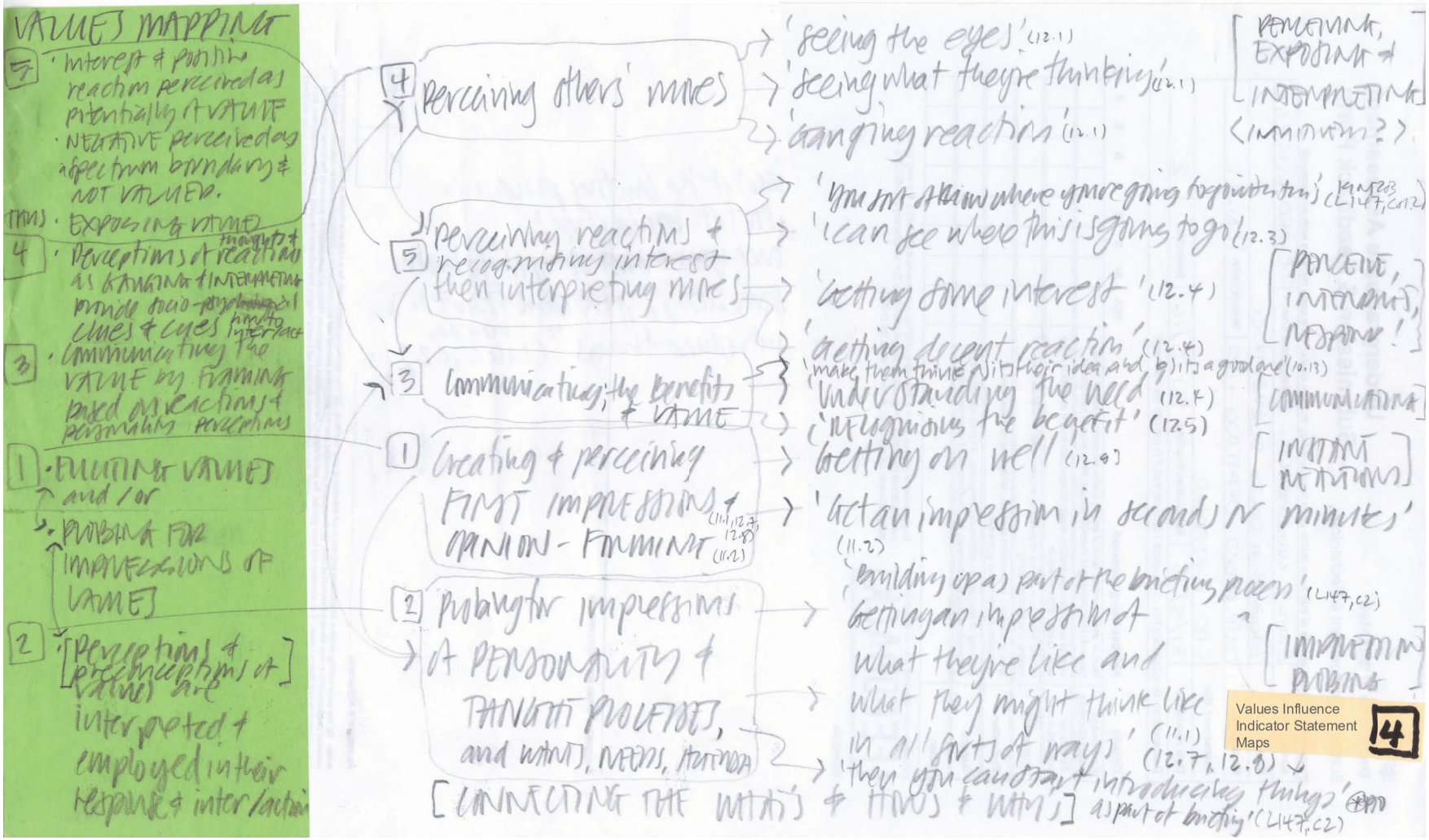
21 · OTHER'S PSYCH. PROCESSES / INFL.
15 · PPTS SOC-PSY. COG MECH
= 9 · SOCIAL INFLUENCES
= 9 · TECHNICAL INFLUENCES
6 · POLITICAL INFLUENCES.

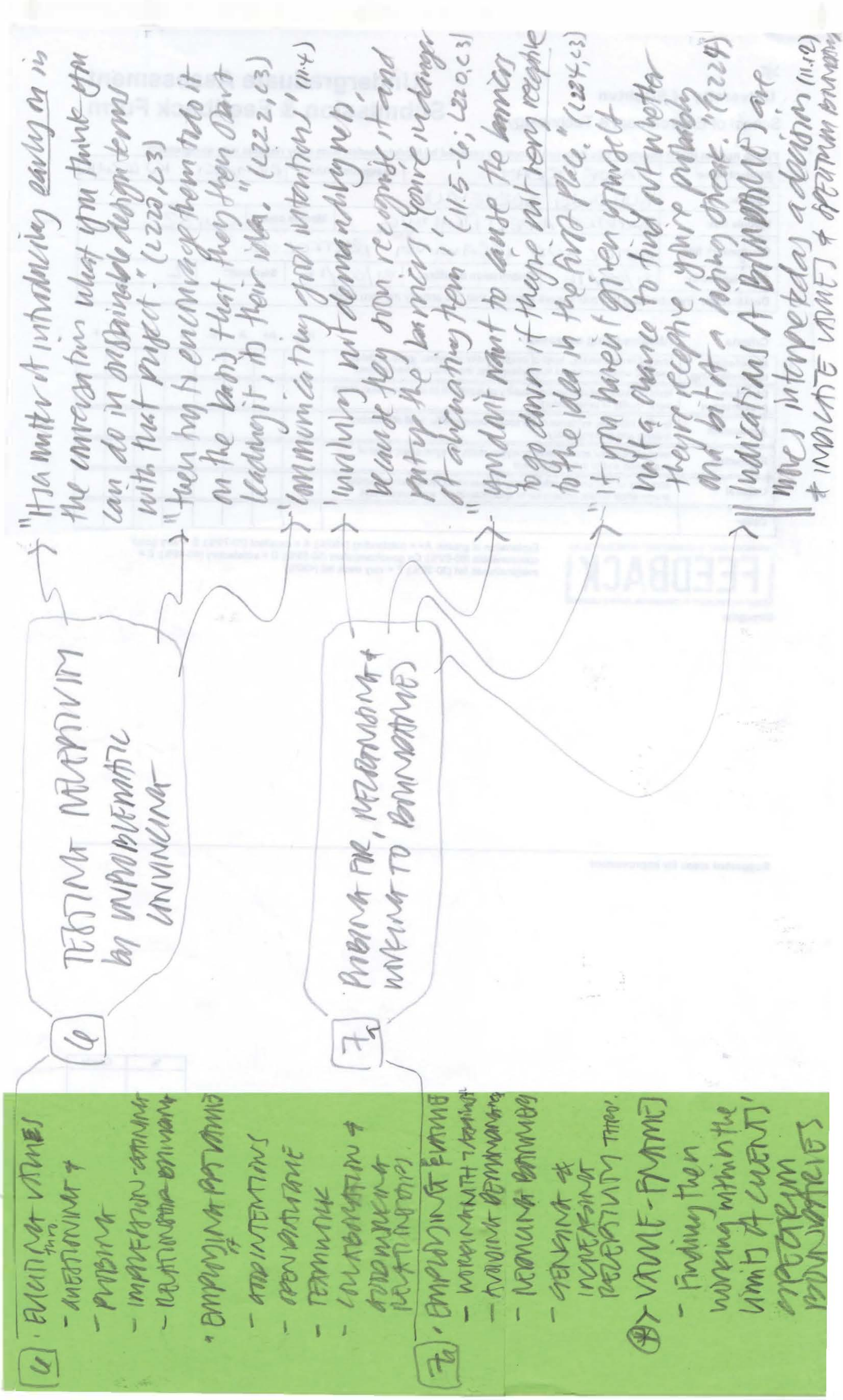
· VERY EARLY
· EARLY
· EARLY-MID
· MIDWAY / LATER
· THROUGHOUT

Ref	Count	Theme	Code	Description
4.5	5	Managing own value-frames (i.e. efficiency-effectiveness, commitment, commercial awareness, understanding and communication, cost, etc.) — E 3, EM 2, T 4	14.2	PPTs judges and values technically significant sustainability measures
			14.26	PPTs value frames of understanding and communication; Favourable/amenable perspectives on and commitment to sustainability askey success factors: understanding planning officer, committed client
			14.7 (VF, LF)	Value is placed on financial and cost frames by PPTs and SHs
			14.15	PPT probing for and securing early loose commitment influences later frame-building; places individuals' location on a Commitment Spectrum
			14.22	PPTs Efficiency = effectiveness value-frames
5.0	21	**STAKEHOLDERS' Individual Psychological Processes / Influences**		
5.1	2	Client Experience; Others' prior knowledge / experience — E 2, T 2	13.4	As driver, UNDERLYING, Commercial client's past experience knowing/understanding their drivers
			14.17	Client experience a major influence on sustainability interest and outcomes
5.2	4	Favourable and/or amenable attitudes and/or perspectives — E 1, EM 2, M 1, T 1	14.5	Commercial clients' needs demand commercial awareness, well-designed delivery, and frames that speak to it; recognition of it is POSITIVE
			14.26	Favourable/amenable perspectives on and commitment to sustainability askey success factors: understanding planning officer, committed client
			14.28 (LF)	Local authority and outside advisors impasse (CAS)
			14.29	Change in Stakeholder's (EH) attitudes toward modernisation as conservation versus preservation
5.3	2	Commitment to sustainability; gaining early and retaining — E 2, T 2	14.4	"Evangelical" client's NEW FRAME/VALUE OF COMMITMENT moderates, and perhaps even trumps Cost frames
			14.15	PPT probing for and securing early loose commitment influences later frame-building; places individuals' location on a Commitment Spectrum
5.4	2	Identifying and differentiating wants and needs — E 1, EM 1, T 2	14.5	Commercial clients' needs demand commercial awareness, well-designed delivery, and frames that speak to it; recognition of it is POSITIVE
			14.20	Commercial funding pressure to achieve certain standards; identifying/differentiating want and need
5.5	3	Overriding demands, as multiple complex undifferentiated priorities, indicating conflicting values — EM 1, M 1	14.25 (LF)	Multiple, conflicting, priority-undifferentiated demands; Client's overriding demands consequentially lead to lack of want/interest/commitment in sustainability, ultimately influencing values-based decisions
			14.27 (VF, LF)	PO/Planner's frame of 'Countryside Visual Impact (CVI)'; negative influence in problem framing
			14.28 (LF)	Local authority and outside advisors impasse (CAS)
5.6	4	Understanding and communicating benefits, advantages, disadvantages — E 2, EM 1, T 2	14.9	larger clients "understand that good, sustainable design is a benefit". Client-type and size influence on the PF, positive; understanding the benefits, advantages
			14.13	Larger commercial clients embrace sustainability because it gives competitive advantage to 'stand out'
			14.14	Small clients not disadvantaged by lack of sustainability
			14.23 (VF, LF)	Cost-benefit analysis and CapEx/LCC framing
5.7	3	Idealism, preconceptions recognised, acknowledged, pragmatically managed — E 4, EM 1, T 4	14.4	"Evangelical" client's VALUE/FRAME OF COMMITMENT moderates, and perhaps even trumps Cost frames
			14.6	Overcoming small private client PRECONCEIVED IDEALISM versus REALITY of sust costs
			14.17	Client experience a major influence on sustainability interest and outcomes
5.8	2	Others pre-conceived or pre-existing attitudes to sustainability	14.26	Favourable/amenable perspectives on and commitment to sustainability askey success factors: understanding planning officer, committed client
			14.29	Change in Stakeholder's (EH) attitudes toward modernisation as conservation versus preservation
5.9	7	Managing others' value-frames (i.e. cost, CapEx-LCC, CVI) aligning with broader long-term sustainability goals — E 4, EM 2, L 1, T 3	14.23 (VF, LF)	Cost-benefit analysis and CapEx/LCC framing
			14.12	Client's supply chain arrangements filter through to form project sustainability decision criteria
			14.27 (VF, LF)	PO/Planner's frame of 'Countryside Visual Impact (CVI)'; negative influence in problem framing
			14.30	Costs of living FRAMES house builders: Political pressures on sustainability policy from big house builders who challenge government targets through COST FRAME, leading to outcries from public about SUST impacts on housebuilding
			13.8	Responsibility, community
			3.11	Ethical responsibility: Ethical approach, right-thing-to-do, is essential
			3.10	Relative importance / value of sustainability. Small private client #sustainability drivers: Passion and values: How important is sustainability to me?
5.10	1	Changing attitudes	14.29	Change in Stakeholder's (EH) attitudes toward modernisation as conservation versus preservation

21 · OTHER'S PSYCH. PROCESSES / INFL.
15 · PPT; SOC-PSY. COG-MECH
= 9 · SOCIAL INFLUENCES
= 9 · TECHNICAL INFLUENCES
6 · POLITICAL INFLUENCES

V · VERY EARLY
· EARLY
· EARLY-MID
· MIDWAY / LATER
· THROUGHOUT


VALUES MAPPING
5 · Interest & positive reactions perceived as potentially of VALUE · NEGATIVE perceived as affect from boundary & NOT VALUED.
THUS · EXPOSING & VALUED
4 · Perceptions of reactions as framing & INTERPRETIVE provide socio-psychological clues & cues into the VALUE
3 · Communicating the VALUE by framing based on reactions & perceptions perceptions
1 · EVALUATE VALUES and/or
2 · PROBING FOR IMPRESSIONS OF VALUE
[Perceptions & perceptions of value] are interpreted & employed in their response & interaction
4 Perceiving others' moves
'seeing the eyes' (12.1)
'seeing what they're thinking' (12.1)
'gauging reactions' (12.1)
[PERCEIVING, EXPOSING & INTERPRETING <INTENTIONS?>]
5 Perceiving reactions & recognizing interest then interpreting moves
'you just show where you're going to go' (L143, C2)
'I can see where this is going to go' (12.3)
'getting some interest' (12.4)
'getting decent reaction' (12.4)
[PERCEIVE, INTERPRET, RESPOND!]
3 Communicating the benefits & VALUE
'make them think a) it's their idea and b) it's a good one' (10.13)
'understanding the need' (12.4)
'recognizing the benefit' (12.5)
[COMMUNICATING]
1 Creating & perceiving FIRST IMPRESSIONS & OPINION-FORMING (11.1, 12.7, 12.8) (11.2)
'getting on well' (12.8)
'get an impression in seconds or minutes' (11.2)
[INITIAL IMPRESSIONS]
2 Probing for impressions of PERSONALITY & THOUGHT PROCESSES, and WANTS, NEEDS, MOTIVES
'building up a picture of the briefing process' (L147, C2)
'getting an impression of what they're like and what they might think like in all sorts of ways' (11.1)
'then you can start introducing things' (12.7, 12.8)
[IMPLEMENTING PROBING]
[CONNECTING THE WANTS & NEEDS & WANTS] as part of briefing (L147, C2)
Values Influence Indicator Statement Maps
4


6 · ELICITING VALUES thro
- QUESTIONING &
- PROBING
- IMPRESSION-GAINING
- RELATIONSHIP-BUILDING
• EMPLOYING PAST VALUES of
- GOOD INTENTIONS
- OPEN DIALOGUE
- TEAMWORK
- COLLABORATION & RELATIONSHIP-BUILDING [?]
7a · EMPLOYING FRAMING
- WORKING WITH TERMINOLOGY [?]
- AVOIDING DEMANDING [?]
- LOWERING BARRIERS
- SENSING & INCREASING RECEPTIVITY THRO'.
* VALUE-FRAMES
- Finding then working within the limits of CLIENTS' SPECTRUM BOUNDARIES
6 TESTING RECEPTIVITY by UNPROBLEMATIC CONVINCING
7 PROBING FOR, RECOGNISING & WORKING TO BOUNDARIES
"It's a matter of introducing early on in the conversation what you think you can do in sustainable design terms with that project." (L220, C3)
"then try to encourage them to do it on the basis that they then start leading it, its their idea." (L222, C3)
'communicating good intentions' (11.4)
'working not demandingness, because they soon recognise it and put up the barriers; you're in danger of alienating them' (11.5-6; L220, C3)
"you don't want to cause the barriers to go down if they're not very receptive to the idea in the first place." (L224, C3)
"if you haven't given yourself half a chance to find out whether they're receptive, you're probably on a bit of a losing streak." (L224)
Indications of BOUNDARIES are moves interpreted as a decision (11.12) & INDICATE VALUES & SPECTRUM BOUNDARY

7b · INTERPRETING, ASSESSING & EMPLOYING VALUES.

> Employing own values when interpreting + assessing complex requirements based on elicitations + interpretations of client values.

ALL ARE STEPS

7b PROBING FOR, RECOGNISING + WORKING TO BRAND VALUES

→ 'using personal judgement, which is probably quite a strong thing' (12.12)

→ 'an emphasis on some weird things in the CfSH' (12.14)

→ 'commercial clients have already been beaten into submission' (12.14)

→ "with people who don't have [policy] level corporate input, you've got to get more out of them" (L343, CC)

* PROBING FOR, RECOGNISING + WORKING WITH VALUES

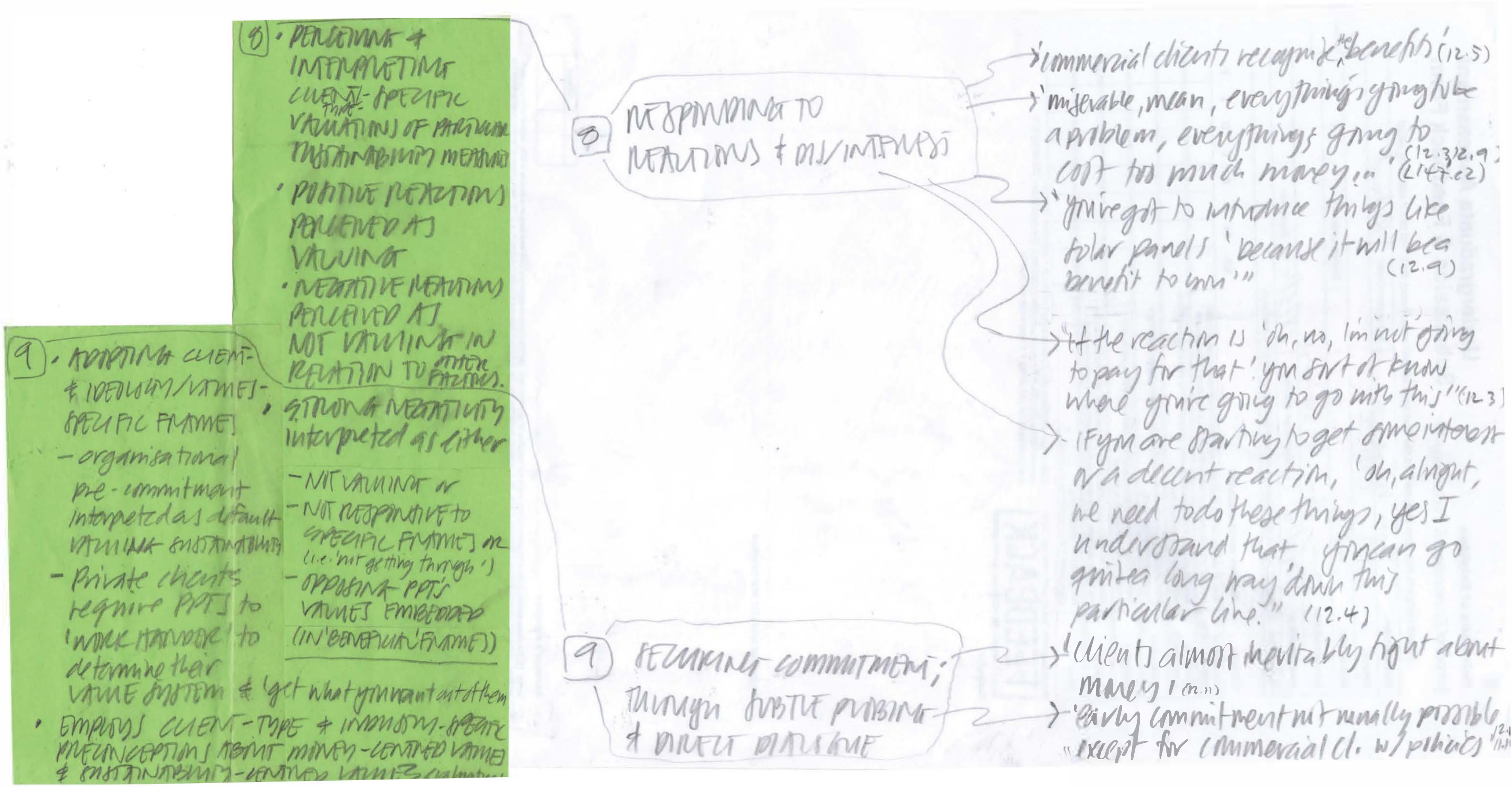
→ "I try and tease out of people what sort of value system they hold. (L329, C2)

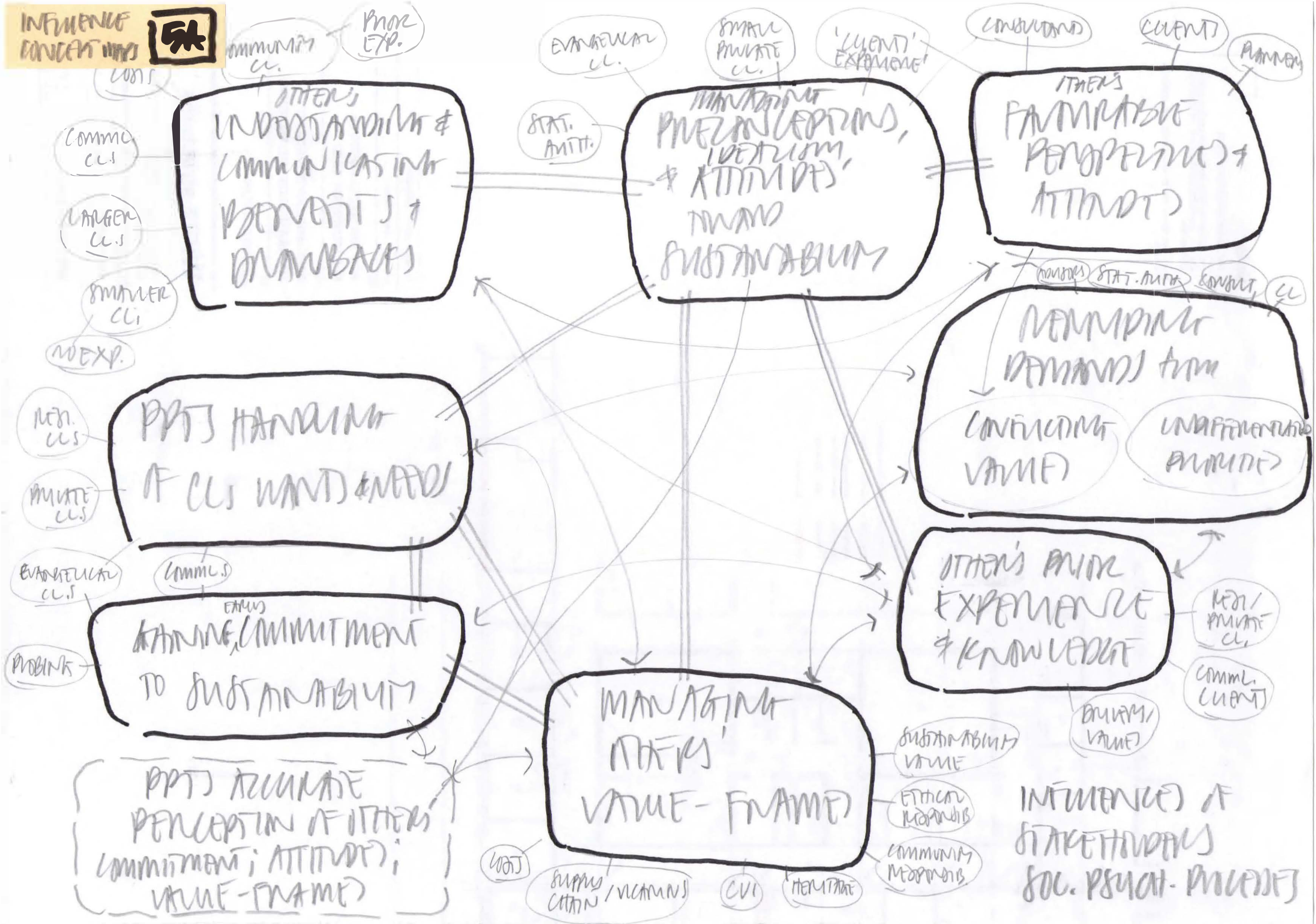
Because you soon pick up on the fact that if somebody wants to support [the local aspect of sustainability], and they see that as sustainable, then you can push it and they will be receptive." (L329 C2)

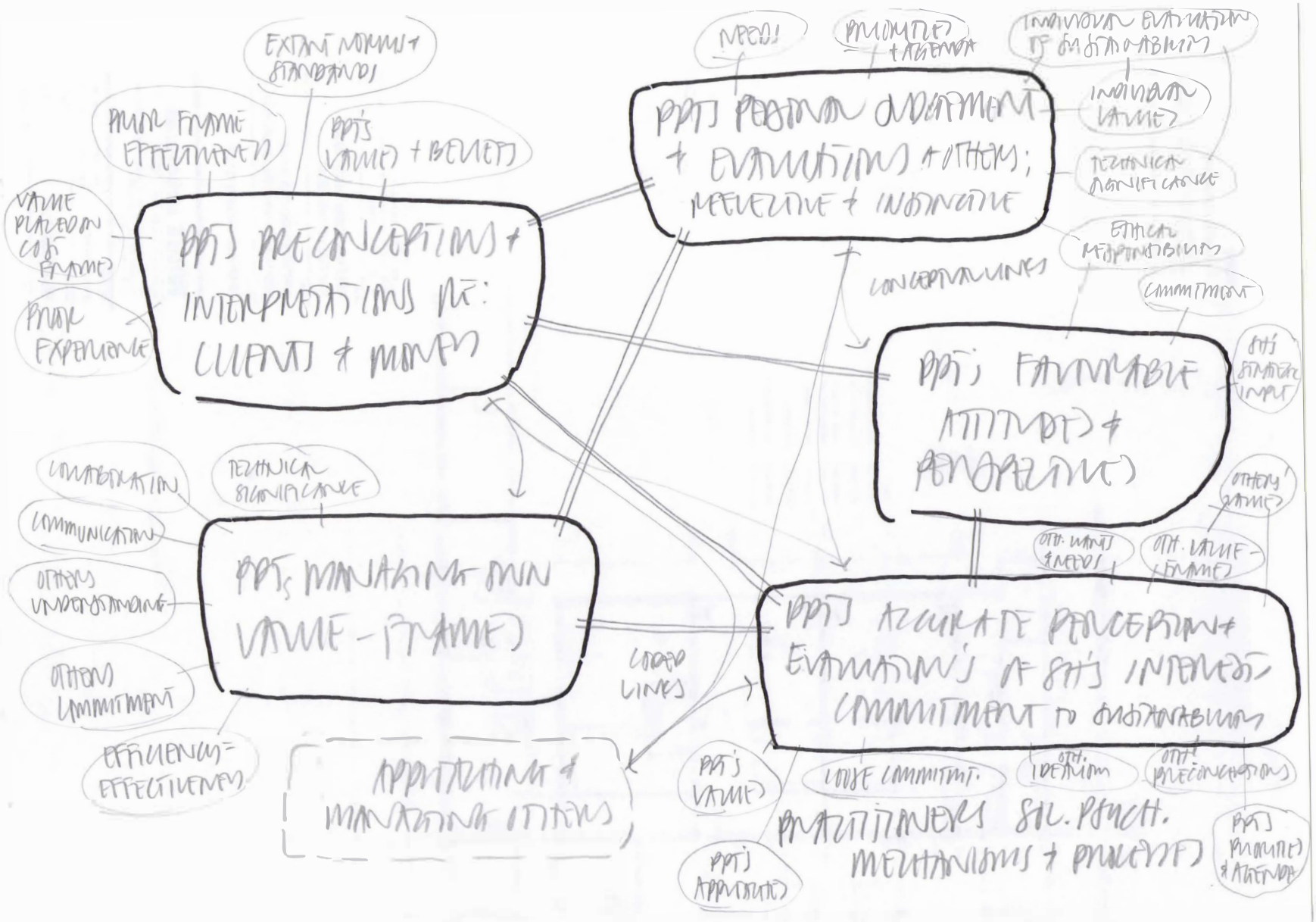
PICK UP SUPPORT

→ REFRAME VIA

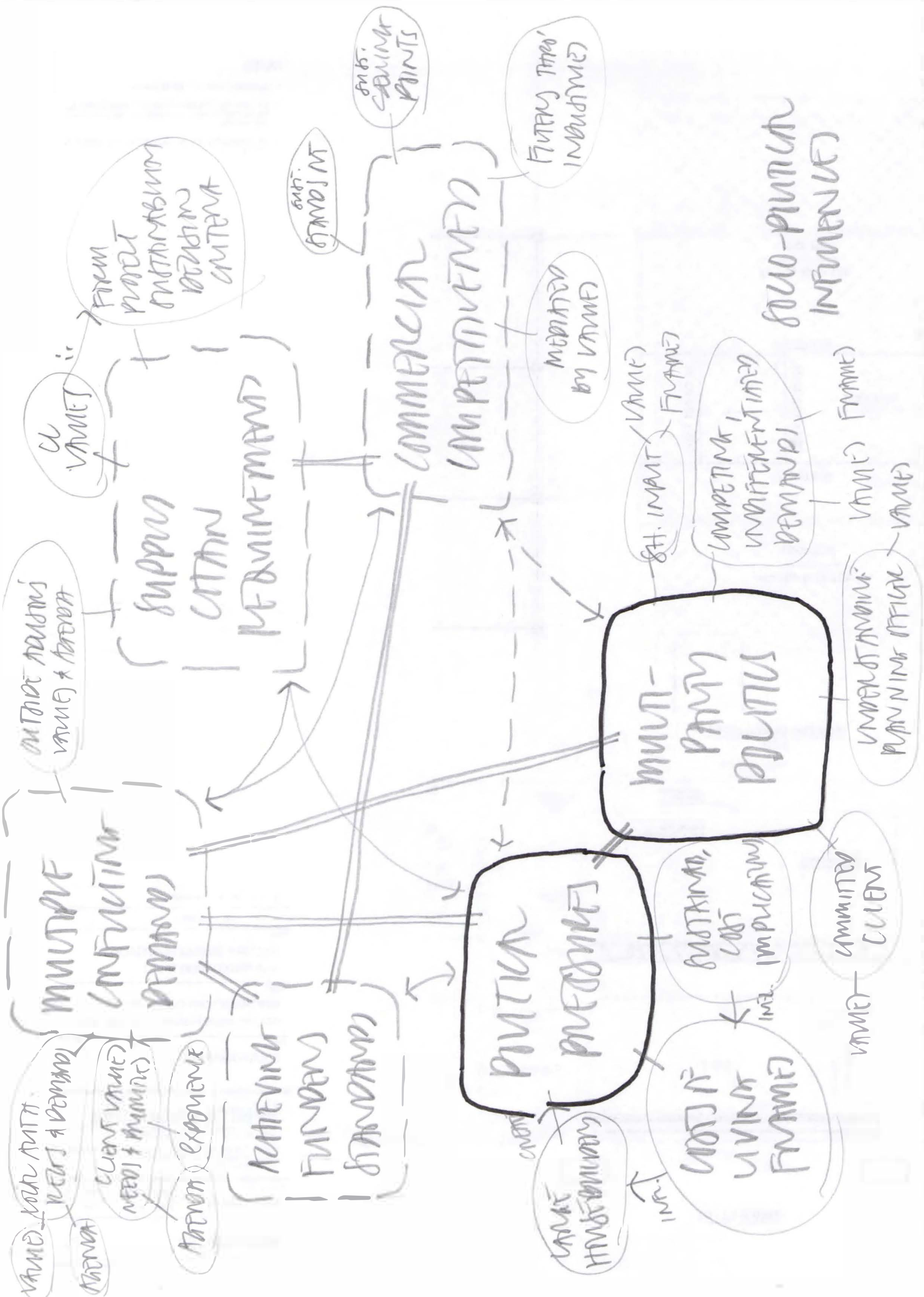
FRAMING USING VALUES-BASED REASONS. (10.14) REFRAMING

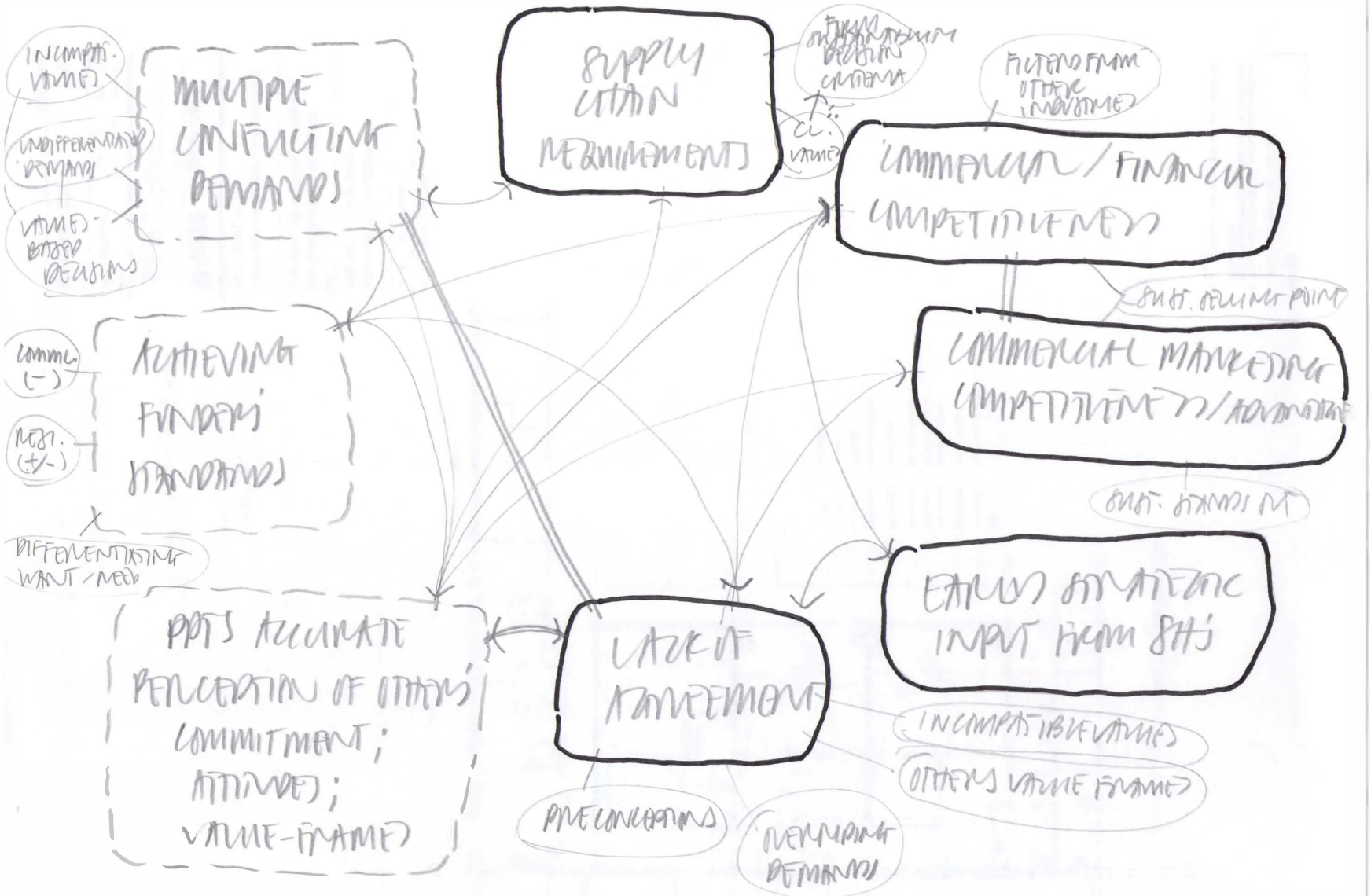

8 · PERCEIVING & INTERPRETING CLIENT-TYPE-SPECIFIC VALUATIONS OF PARTICULAR SUSTAINABILITY MEASURES
· POSITIVE REACTIONS PERCEIVED AS VALUING
· NEGATIVE REACTIONS PERCEIVED AS NOT VALUING IN RELATION TO OTHER FACTORS.
· STRONG NEGATIVITY interpreted as either
– NOT VALUING or
– NOT RESPONSIVE to SPECIFIC FRAMES or (i.e. 'not getting through')
– OPPOSING PPTS VALUES EMBEDDED (IN 'BENEFICIAL' FRAME))
9 · ADOPTING CLIENT- & IDEOLOGY/VALUES-SPECIFIC FRAMES
– organisational pre-commitment interpreted as default valuing sustainability
– Private clients require PPTS to 'work harder' to determine their value system & 'get what you want out of them'
· EMPLOYS CLIENT-TYPE & INDUSTRY-SPECIFIC PRECONCEPTIONS ABOUT MONEY-CENTRED VALUES & SUSTAINABILITY-CENTRED VALUES
8 RESPONDING TO REACTIONS & OBJ/INTERESTS
'commercial clients recognise "benefits"' (12.5)
'miserable, mean, everything's going to be a problem, everything's going to cost too much money...' (12.3, 12.9, 21, 27, 22)
"you've got to introduce things like solar panels 'because it will be a benefit to you'" (12.9)
"if the reaction is 'oh, no, I'm not going to pay for that' you sort of know where you're going to go with this" (12.3)
"If you are starting to get some interest or a decent reaction, 'oh, alright, we need to do these things, yes I understand that' you can go quite a long way down this particular line." (12.4)
9 SECURING COMMITMENT; THROUGH SUBTLE PROBING & DIRECT DIALOGUE
'clients almost inevitably fight about money' (12.11)
'early commitment not usually possible "except for commercial cl. w/ policies"'

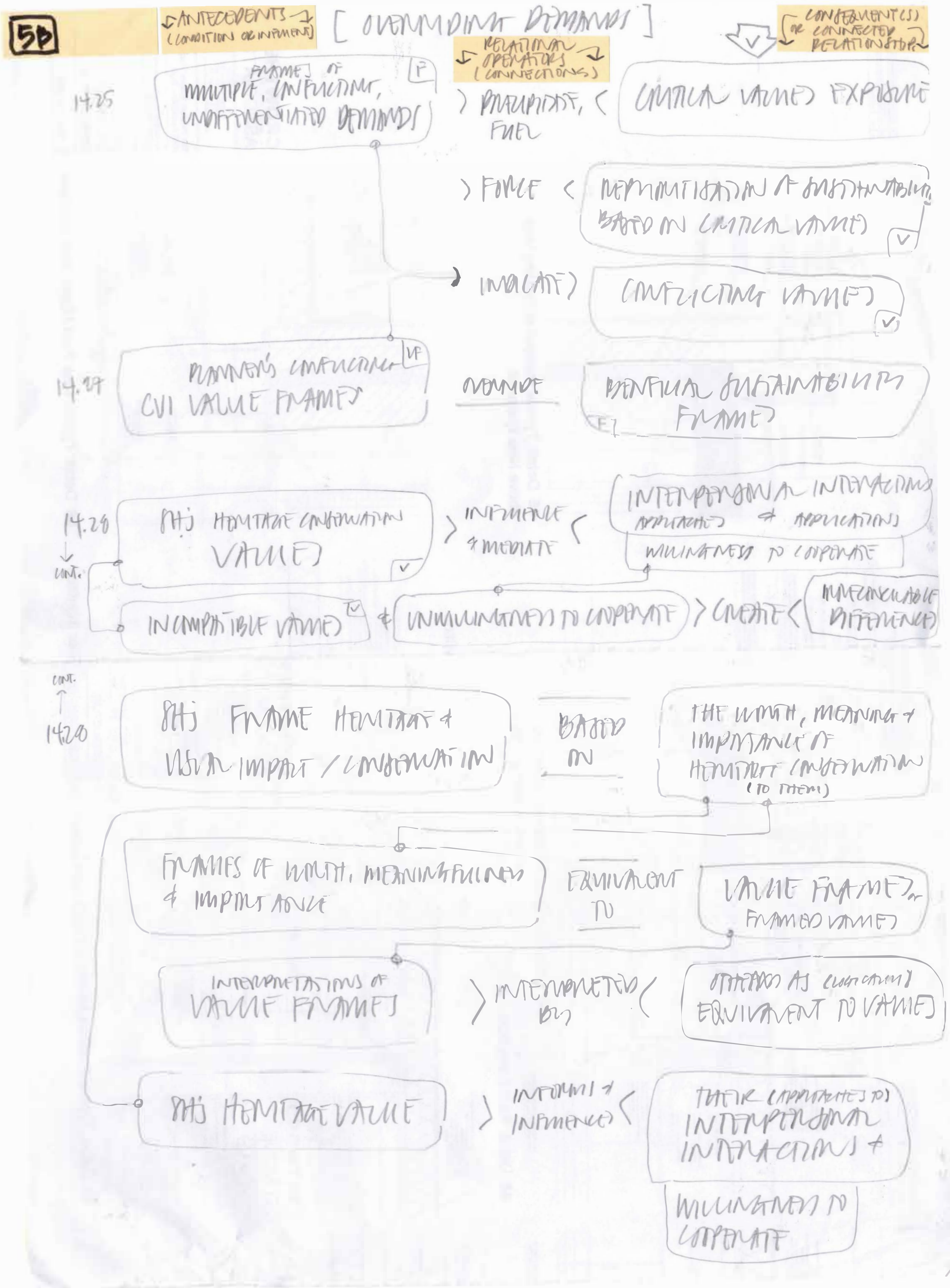

INFLUENCE CONCEPT MAP
OTHERS' UNDERSTANDING & COMMUNICATING BENEFITS & DRAWBACKS
MANAGING PRECONCEPTIONS, IDEALISM, & ATTITUDES TOWARD SUSTAINABILITY
OTHERS' FAVOURABLE PERSPECTIVES & ATTITUDES
CONFLICTING VALUES
PPTS HANDLING OF CLS WANTS & NEEDS
EARLY GAINING COMMITMENT TO SUSTAINABILITY
OTHERS' PRIOR EXPERIENCE & KNOWLEDGE
PPTS ACCURATE PERCEPTION OF OTHERS' COMMITMENT, ATTITUDES, VALUE-FRAMES
MANAGING OTHERS' VALUE-FRAMES
INFLUENCES OF STAKEHOLDERS SOC. PSYCH. PROCESSES
COSTS
COMMUNITY CL.
PRIOR EXP.
COMMC CL.S
LARGER CL.S
SMALLER CL.S
NO EXP.
EVANGELICAL CL.
STAT. AUTH.
SMALL PRIVATE CL.
'CLIENT' EXPERIENCE
CONSULTANTS
CLIENT
PLANNERS
CONSULT.
CL
PRIVATE CL.S
EVANGELICAL CL.S
COMML.S
PROBING
COMML. CLIENT
SUSTAINABILITY VALUE
ETHICAL RESPONSIB.
COMMUNITY RESPONSIB.
HERITAGE
CVI
SUPPLY CHAIN / VICARIOUS
USERS

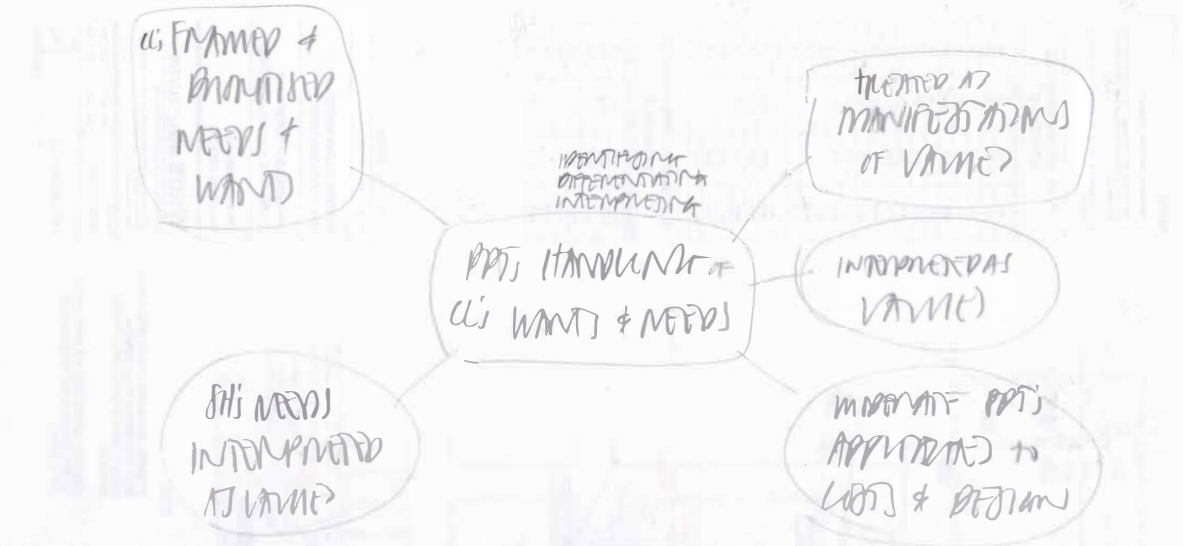

EXTANT NORMS + STANDARDS
PRIOR FRAME EFFECTIVENESS
PPT'S VALUES + BELIEFS
VALUE PLACED ON OBJ FRAME
PRIOR EXPERIENCE
PPT'S PRECONCEPTIONS + INTERPRETATIONS RE: CLIENTS + MANAGERS
NEEDS
PRIORITIES + AGENDAS
PPT'S POSITION, JUDGMENT + EVALUATIONS OF OTHERS; REFLECTIVE + INSTINCTIVE
INDIVIDUAL EVALUATION OF SUSTAINABILITY
INDIVIDUAL VALUES
TECHNICAL SIGNIFICANCE
ETHICAL RESPONSIBILITY
COMMITMENT
CONCEPTUAL LINES
PPT'S FAVOURABLE ATTITUDES + PERSPECTIVES
PPT'S STRATEGIC INPUT
COLLABORATION
COMMUNICATION
OTHERS' UNDERSTANDING
OTHERS' COMMITMENT
EFFICIENCY = EFFECTIVENESS
TECHNICAL SIGNIFICANCE
PPT'S MANAGEMENT OF OWN VALUE-FRAME(S)
LOOSE LINES
OTHERS' FRAMES
OTH. WANTS & NEEDS
OTH. VALUE-FRAME
PPT'S ACCURATE PERCEPTION + EVALUATION(S) OF SH'S INTEREST-COMMITMENT TO SUSTAINABILITY
APPROPRIATENESS + MANAGING OTHERS
PPT'S VALUES
PPT'S APPROPRIATE(S)
LOOSE COMMITMT.
OTH. IDEATION
OTH. PRECONCEPTIONS
PRACTITIONERS SH. PSYCH. MECHANISMS + PROCESSES
PPT'S PRIORITIES & AGENDAS

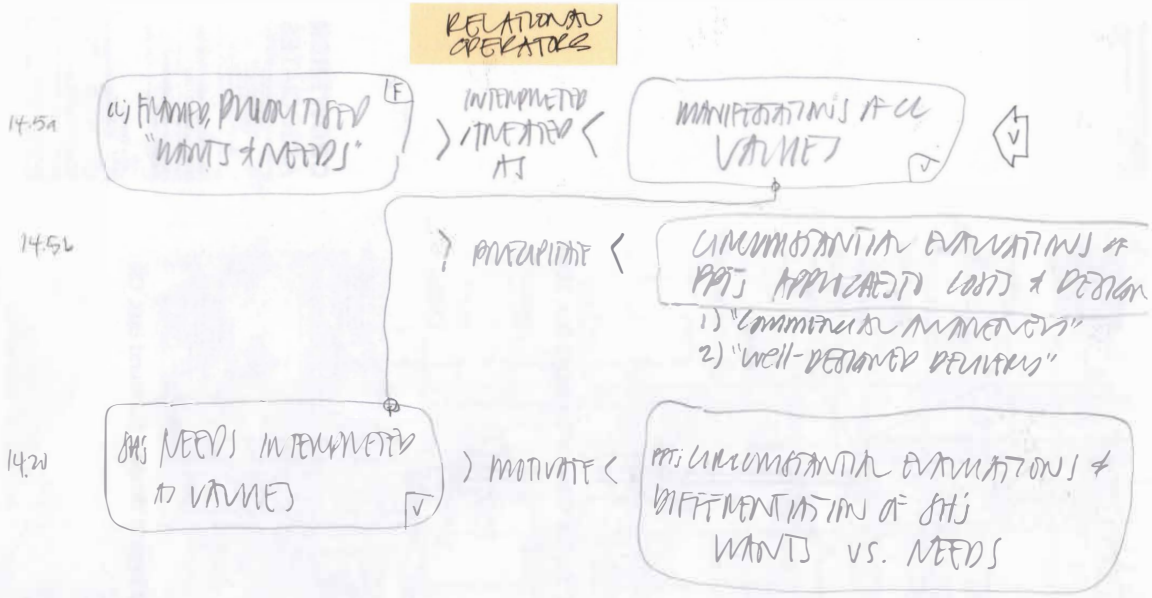

INTERRELATED DESIGN ISSUES
COST-BENEFIT ANALYSIS
SUSTAINABILITY'S INTEGRAL NATURE
KNOWLEDGE & PRACTICAL EXPERIENCE
KNOWLEDGE OF BE. IMPACTS
TECHNICAL COMPLEXITY
SYSTEM COMPLEXITY
CLIENT'S NEEDS
SITE, CONTEXT & CONDITIONS
CONCEPTUAL LINKS
CODED LINKS
BIM INTEGRATED WAYS OF THINKING
VALUES
LOCAL AUTH. REGULATIONS & DEMANDS
AGENDA
CLIENT VALUES, NEEDS + PRIORITIES
AGENDA
EXP.
OUTSIDE ADVISORS VALUES & AGENDA
MULTIPLE CONFLICTING DEMANDS
PARTS VALUES & APPROACHES
ACHIEVING FUNDERS STANDARDS
INFL. FRAMING & SOLVING DESIGN PROBLEMS
APPROPRIATE DESIGN INTERVENTIONS
WANTS
NEEDS
COMMERCIAL FUNDING (+) PRESSURE
REGS (-) FUNDING PRESSURE
SOCIO-TECHNICAL INFLUENCES


POLITICAL PRESSURES
MULTI-PARTY POLITICS
COMMERCIAL COMPETITIVENESS
SUPPLY CHAIN REQUIREMENTS
MULTIPLE CONFLICTING DEMANDS
ACHIEVING FUNDERS STANDARDS
SOCIO-POLITICAL INFLUENCES
COST OF LIVING FRAMED


MULTIPLE CONFLICTING DEMANDS
INCOMPATIBLE VALUES
UNDIFFERENTIATED DEMANDS
VALUE-BASED DECISIONS
SUPPLY CHAIN REQUIREMENTS
CL. VALUE
COMMERCIAL / FINANCIAL COMPETITIVENESS
FILTERED FROM OTHER INVESTMENTS
BUST. DECISION POINT
COMMERCIAL MARKETING COMPETITIVENESS
BUST. STANDSTILL
ACHIEVING FUNDERS STANDARDS
COMMIL (-)
NEGT. (+/-)
DIFFERENTIATING WANT / NEED
EARLY STRATEGIC INPUT FROM SHJ
PPTS ACCURATE PERCEPTION OF OTHERS' COMMITMENT; ATTITUDES; VALUE-FRAMES
LACK OF ENGAGEMENT
INCOMPATIBLE VALUES
OTHERS VALUE FRAMES
PRECONCEPTIONS
OVERWHELM DEMANDS
ADDRESSING & MANAGING SOCIALLY CONSTRUCTED EXPECTATIONS

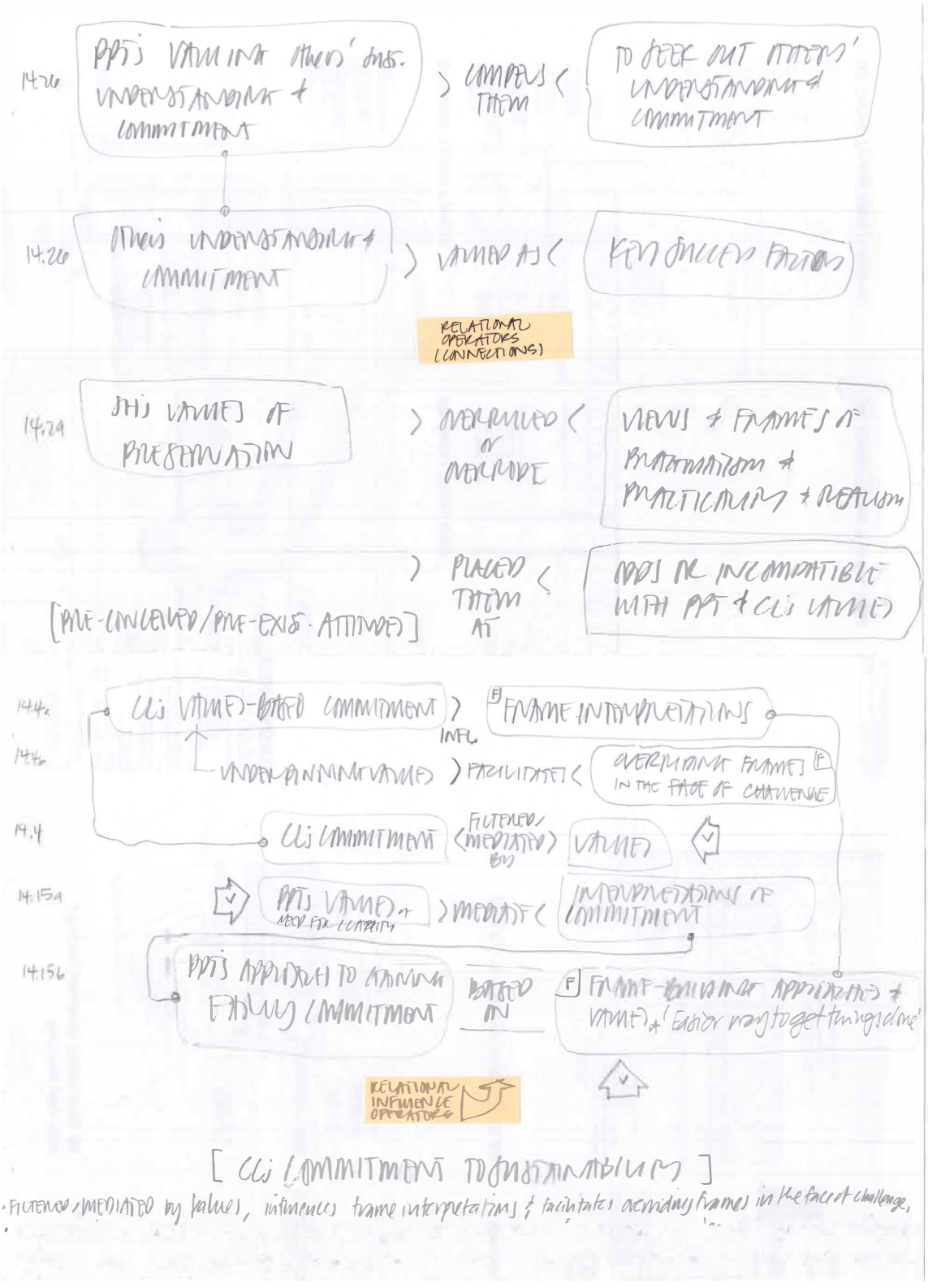

5B
ANTECEDENTS (CONDITION OR INFLUENCE)
[OVERRIDING DEMANDS]
CONSEQUENT(S) OR CONNECTED RELATIONSHIP
RELATIONAL OPERATORS (CONNECTIONS)
14.25
FRAMES OF MULTIPLE, CONFLICTING, UNDIFFERENTIATED DEMANDS
> PRECIPITATE, FUEL <
CRITICAL VALUES EXPOSURE
> FORCE <
REPRIORITISATION OF SUSTAINABILITY BASED ON CRITICAL VALUES
INDICATE
CONFLICTING VALUES
14.27
PLANNER'S CONFLICTING CVI VALUE FRAMES
OVERRIDE
BENEFICIAL SUSTAINABILITY FRAMES
14.28
SH'S HERITAGE CONSERVATION VALUES
> INFLUENCE & MEDIATE <
INTERPERSONAL INTERACTIONS APPROACHES & APPLICATIONS
WILLINGNESS TO COOPERATE
CONT.
INCOMPATIBLE VALUES & UNWILLINGNESS TO COOPERATE
> CREATE <
IRRECONCILABLE DIFFERENCES
CONT.
14.28
SH'S FRAME HERITAGE & VISUAL IMPACT / CONSERVATION
BASED ON
THE WORTH, MEANING & IMPORTANCE OF HERITAGE CONSERVATION (TO THEM)
FRAMES OF WORTH, MEANINGFULNESS & IMPORTANCE
EQUIVALENT TO
VALUE FRAMES or FRAMED VALUES
INTERPRETATIONS OF VALUE FRAMES
> INTERPRETED BY <
OTHERS AS (CONTEXTUALLY) EQUIVALENT TO VALUES
SH'S HERITAGE VALUE
> INFORMS & INFLUENCES <
THEIR (APPROACHES TO) INTERPERSONAL INTERACTIONS &
WILLINGNESS TO COOPERATE



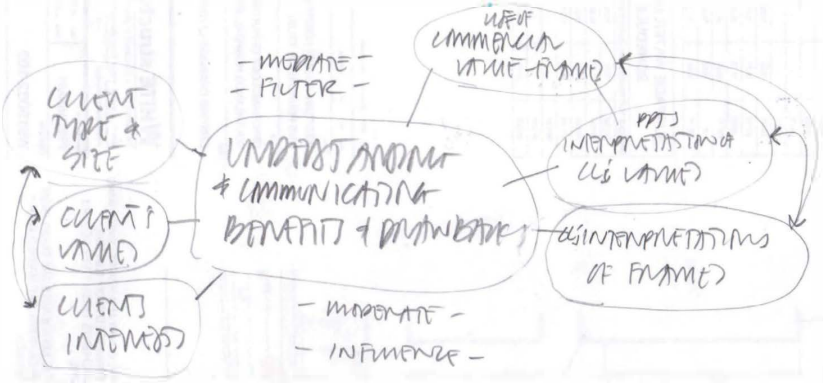


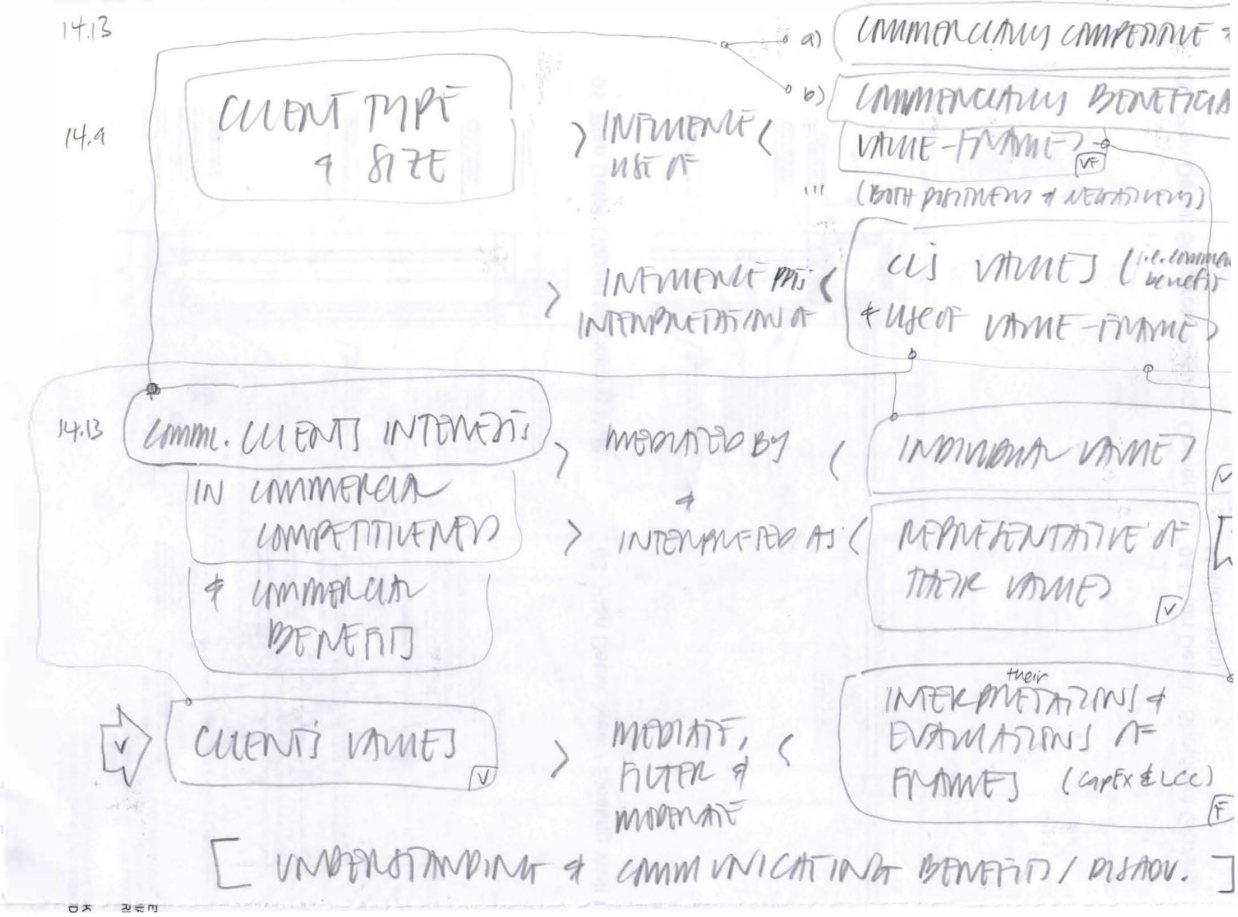
[PPT IDENTIFYING, DIFFERENTIATING & INTERPRETING CLI WANTS & NEEDS]

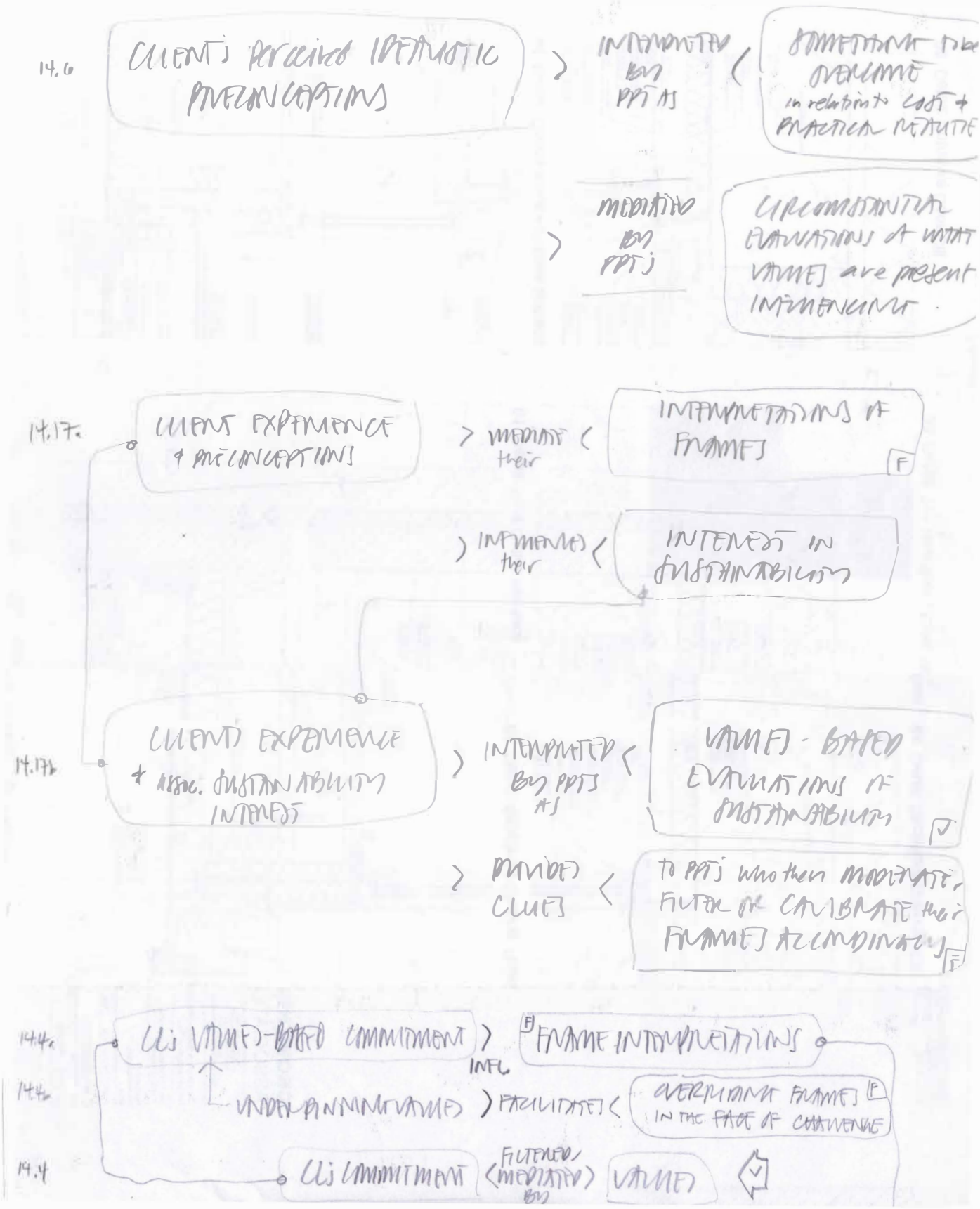
CLi framing of their needs & wants, sometimes prioritised, can be interpreted as manifestations of val which precipitate & motivate circumstantial evaluations & deliberations of their wants vs. needs, and subsequent calibrations of approaches to framing & addressing costs & design.



interpretations A which is filtered by PPTs values & NEED FOR CONTROL, PPTs values & easier way influence their frame building approach, both of which is based their approach to gaining commitment


USE OF COMMERCIAL VALUE-FRAME
– MEDIATE –
– FILTER –
CLIENT TYPE & SIZE
UNDERSTANDING & COMMUNICATING BENEFITS & DISADVANTAGES
PPTS INTERPRETATIONS OF CLI VALUES
CLI'S VALUES
CLI INTERPRETATIONS OF FRAMES
CLIENT'S INTERESTS
– MODERATE –
– INFLUENCE –


14.13
14.9
CLIENT TYPE & SIZE
INFLUENCE USE OF
a)
b)
VALUE-FRAME
VF
(BOTH PERCEIVED & NEGATIVE)
INFLUENCE PPTS INTERPRETATIONS OF
CLI VALUES
& USE OF VALUE-FRAME
14.13
COMM. CLIENT'S INTERESTS IN COMMERCIAL COMPETITIVENESS & COMMERCIAL BENEFITS
MEDIATED BY
&
INTERPRETED AS
INDIVIDUAL VALUES
REPRESENTATIVE OF THEIR VALUES
V
CLIENT'S VALUES
MEDIATE, FILTER & MODERATE
their
INTERPRETATIONS & EVALUATIONS OF FRAMES (CapEx & LCC)
F
[UNDERSTANDING & COMMUNICATING BENEFITS / DISADV.]


14.6
CLIENT'S PERCEIVED IDEMATIC PRECONCEPTIONS
INTERPRETED BY PPTS
SOMETIMES TOO OVERCOME in relation to COST + PRACTICAL RESULTS
MEDIATED BY PPTS
CIRCUMSTANTIAL EVALUATIONS OF WHAT VALUES are present IMMANENCE
14.17
CLIENT EXPERIENCE & PRECONCEPTIONS
MEDIATE their
INTERPRETATIONS OF FRAMES
F
INFLUENCED their
INTEREST IN SUSTAINABILITY
14.17b
CLIENT EXPERIENCE + ASSOC. SUSTAINABILITY INTEREST
INTERPRETED BY PPTS AS
VALUES - BASED EVALUATIONS OF SUSTAINABILITY
V
PROVIDED CLUES
TO PPTS who then MODERATE, FILTER OR CALIBRATE their FRAMES ACCORDINGLY
F
14.4a
CLs VALUES-BASED COMMITMENT
INFL.
F
FRAME INTERPRETATIONS
14.4b
UNDERPINNING VALUES
FACILITATES
OVERCOMING FRAMES IN THE FACE OF CHALLENGE
F
14.4
CLs COMMITMENT
FILTERED/ MEDIATED BY
VALUES
V

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Appendix 4.2 MA2 Mapping V+F Interaction Processes (Summary)

Contents

Figures

Introduction: Mapping how basic framing interactions can work

This Appendix includes the extended mapping study MA2, summarised in Chapter 4, conducted as part of Preliminary Exploratory Study ES2. Through six architect-client cases generated with Group-G2 in ES2, eight main elements were identified and are unpacked individually, graphically represented, and interconnected in this Appendix in eight parts. First, the mapping exercise identified how frames operated as 'values packages' (§0). Next, values, their operation, and potential influence via frames (PF+DF) were identified (§0). Then, mapping looked at values and frames relationships, and subsequently examined values and frames relationships for their influence (§0-0). Iterations of those examinations were conducted alongside any potential 'zones of influence' between values and frames (§0), Values and Frames interactions and factors over time (§0), which led to a clear understanding of three main framing interactions in a project chronology (§0). The final stage mapped values and their influence on framing and frames as pathways (§0). The Appendix concludes with consideration on taking values and frames investigations forward into the remaining stages of research in ES3 and beyond (§0).

Element 1: Frames and their Operation as Values Packages

The mapping exercise found that frames operated as 'values packages'. These 'envelopes' were considered to contain, and communicate to listeners, four frame elements: decision problems, interpretations, evaluations, and treatment recommendations as deducted from literature (Entman, 1993 in; Matthes and Kohring, 2008). For interlocutors, the decision-problem may have already been set or implied in conversation contexts, i.e., each spoken frame need not repeat the decision problem. The interpretation may be processed 'internally' but evidenced 'externally' alongside the evaluations and treatment recommendation communicated. Values manifested in frames via components of evaluations and treatment recommendations. For both 'sides' of a decision-making conversation, architectural participant and decision-maker negotiated and contributed to details of these four decision-frame elements.

Five key factors about frames were recorded and annotated in an Operationalised Frames Notation (Figure 4). The primary information recorded was: Which frame as communicated and transcribed; Whose frame, i.e., which actor; and frame contextualisation as a conceptual relationship or linkage. We also captured How the frame was ascertained; When in the process the frame was found, i.e., at which stage; and What priority, i.e., in what order of precedency the frame manifested in preference trajectory; and How ascertained.

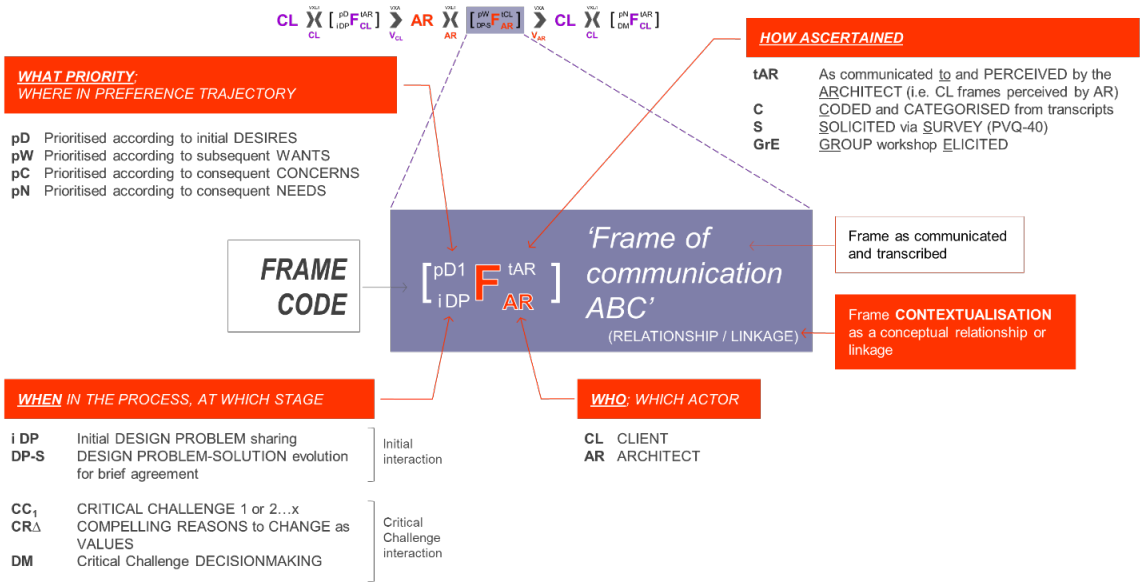


Figure 4 Operationalised Frames Notation

Element 2: Values, their Operation, and Potential Influence

Similarly, six key factors about values were also recorded and annotated in an Operationalised Values Notation (Figure 5). The primary information recorded was the Coded name of a human value; the value contextualisation as a conceptual relationship or linkage; and who or which actor. Similar to frames, it was also possible to capture: what priority; where in a values hierarchy; when in the process, at which stage; and how ascertained. To map this information, we recorded and annotated

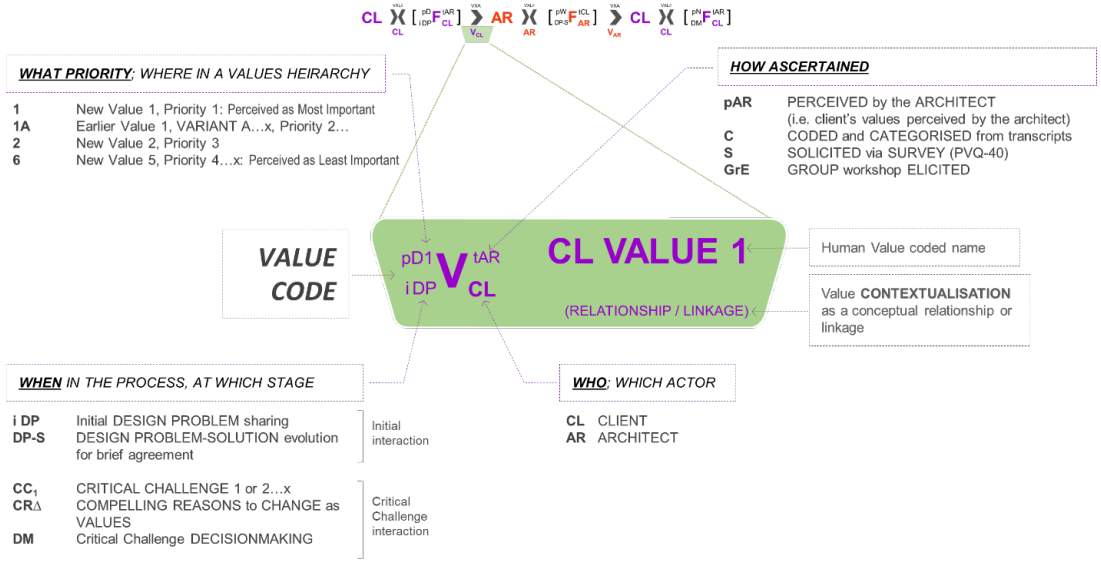


Figure 5 Operationalised Values Notation

Element 3: Looking at Values and Frames relationships

By looking for the presence of values in client's initial problem frames, we sought to identify which initial values were brought to the conversation by the architect and the client that are present in the initial design problem frames (Figure 6-Figure 7). By looking for the presence of values in architect's problem frames /reframing and from where they come, we sought to identify which initial values reappear in the architect's subsequent characterisation of the design problem-solution (or briefing) frames. This was detected by analysing transcripts for what the architect says is the most I/W/M to him and their client at a particular stage. Again, by looking for the presence of values in decisions, and from where they come and/or change, we also sought to identify which values ultimately appear in the decision (D-M process outcome), it's frames, and reasoning mechanisms used to justify the decision that captures what is really worthwhile, meaningful, and important. With frames acting as values transmitters, it was found that participant's frames contain participant's values information, having first identified and coded their values through questionnaire, workshop elicitation, and interview transcript analysis. It was then found client's decision frames also acted as critical values transmitters of those values with which a client makes a decision in the face of a challenge. It was thus found that frames of communication were found to interpret and translate both participant's values *and* client's values (Figure 6-Figure 8).

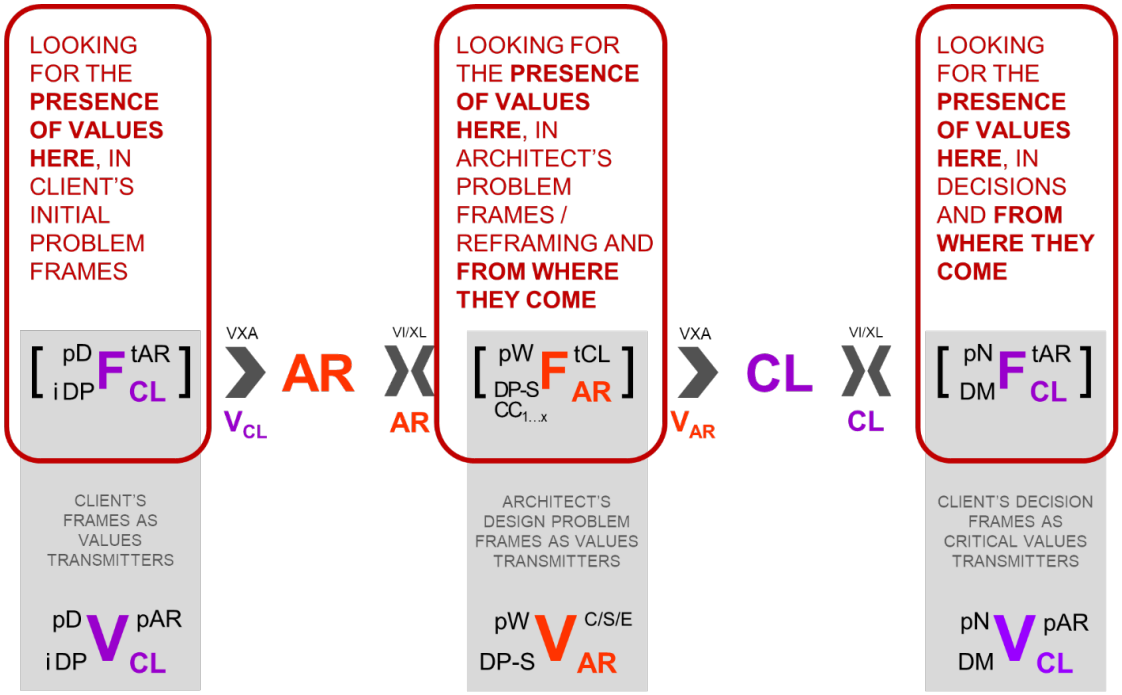


Figure 6 Looking for values and frames and their relationships

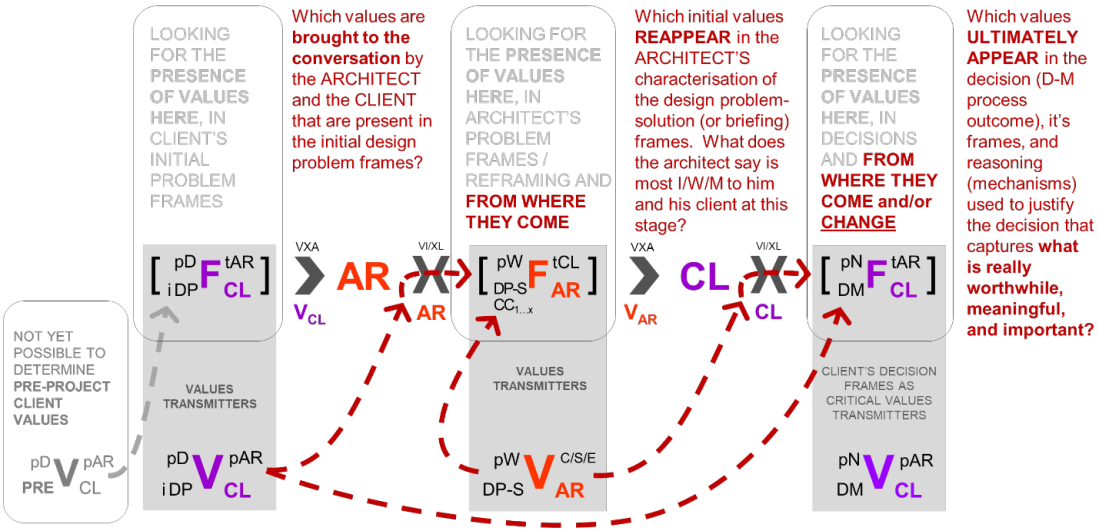


Figure 7 Looking at values and frames and their relationships

Importantly, through relational analysis it was found that the interrelations of values and frames can be attributed to frames providing compelling reasons to pursue or change sustainability which behave like 'values drivers' that activate the values evident in decision-frames, thus confirming that values motivate or drive decision-making and suggesting the causal relationship depicted in **Error! Reference source not found.**. This is further explored in detail in ES2c, Chapter 4, §4.3.4.

Element 4: Looking at Values and Frames relationships for their influence

Client communication frames were transmitted from client to architect in which client values information was interpreted by architect (Figure 9-Figure 8). Through a values transaction (VXA), client frames provide architects with client values information. Therein, values interpretation / translation (VI/XL) typically happened when client values are interpreted and translated into architect frames with architect values acting as filters.

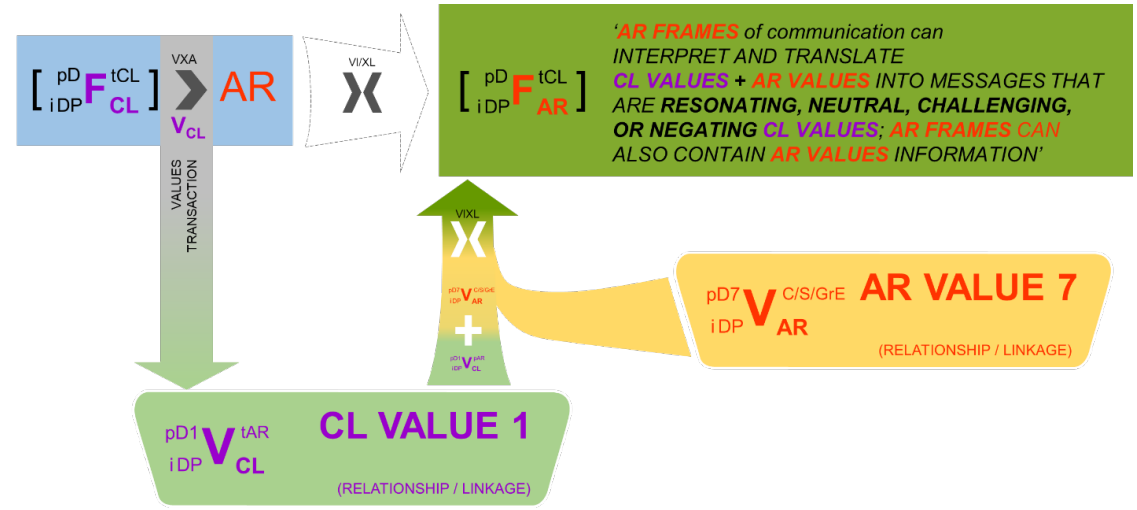


Figure 9 Values and Frames influence notation

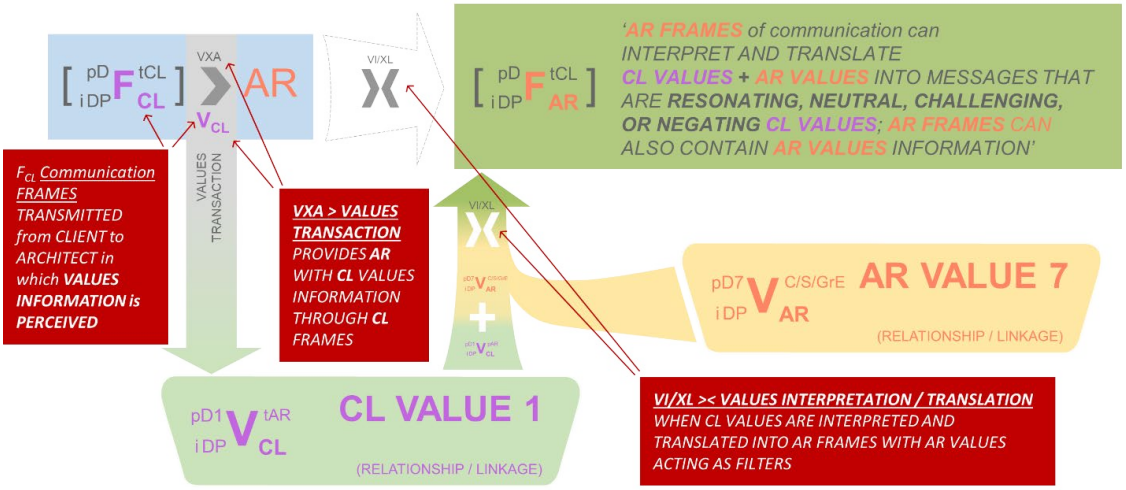


Figure 8 Description of Values + Frames influence notation

Element 5: Potential 'zones of influence' between values and frames

Most importantly, it was found that framed messages are resonating, neutral, challenging, or suppressing other' values (Figure 10-Figure 11). The translation of values into frames is evidenced in the extent to which subsequent frames accurately capture and re-present the speaker's values. 'Starter' values were communicated initially by the client, then with the translation of values into architects' frames, it was then considered that 'benchmark values' were established for client and architect.

Thus, values were identified in frames of communication about sustainability through an evaluation *or* varying level or importance, worthwhileness, and meaningfulness expressed in a frame by its information/meaning. The value, evaluation, and its expression are related to the context, which can explain why multiple values and priority variations can manifest in a phased framing conversation (Figure 10). The 'zone' of

influence was considered as the space in which listeners identified and cognitively processes (whether implicitly or explicitly) speakers values, for both architect and client (Figure 11).

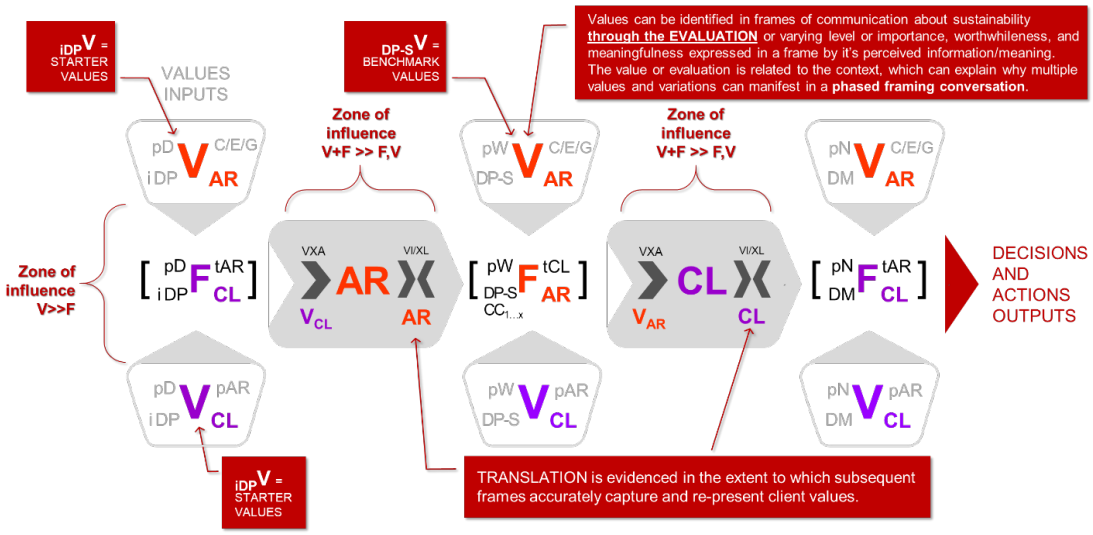


Figure 10 Identification of potential zones of influence

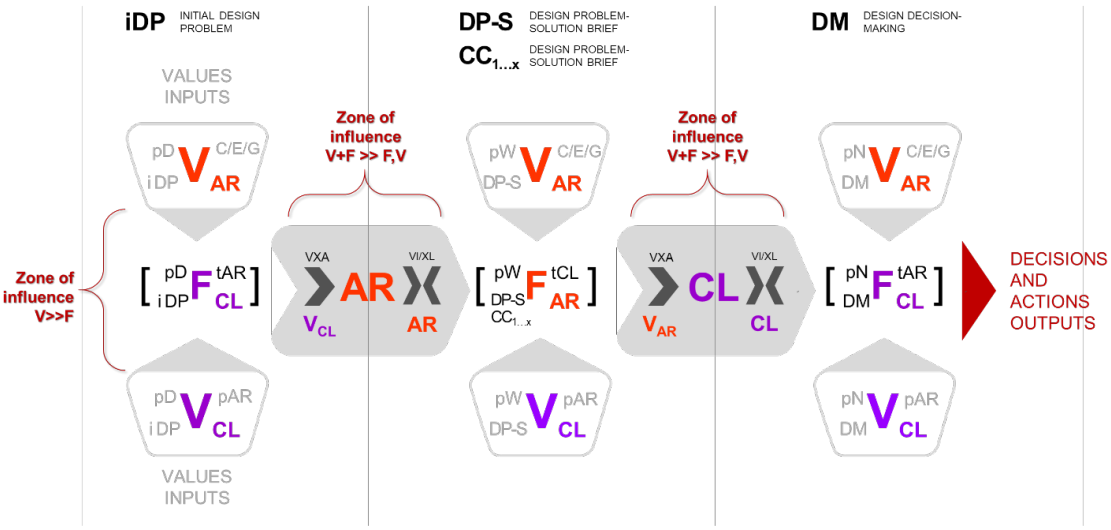


Figure 11 Potential Zones of influence: V → F and V+F → F, V, DM

Element 6: Values and Frames interactions and factors over time

Client's (CL) initial design problem (iDP) frames (F) express values information. Client values (VCL) can be communicated in a values transaction (VXA) to the architect, who interprets and translates values information into the architect's (AR) design problem-solution (DP-S) brief frames (F). These brief frames (F) also express values information about the architect. The architect's values information is communicated in a values transaction (VXA) to the client, who interprets and translates values information into

client (CL) decision-making (DM) frames (F) and reasoning. These frames and their reasoning mechanisms express the client's critical values information [S10] on which they ultimately make decisions. In this way, framing a problem can function as values transmitters. Architects filter, interpret, and translate client's values into their problem frames. Client's decision-making frames during critical challenge can act as their critical values transmitters. Clients also filter, re-interpret, and retranslate values into their decision frames (Figure 13). In this way, 'values transactions' happen over time via frames (Figure 12).

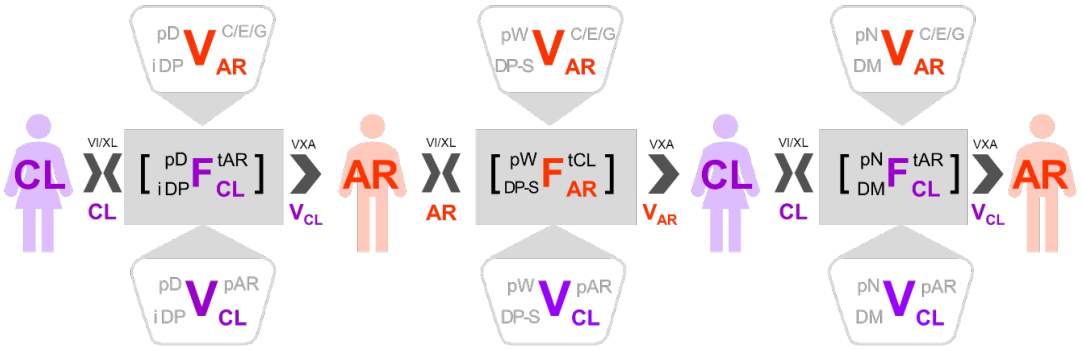


Figure 13 Diagrammatic representation of values influence on frames over time

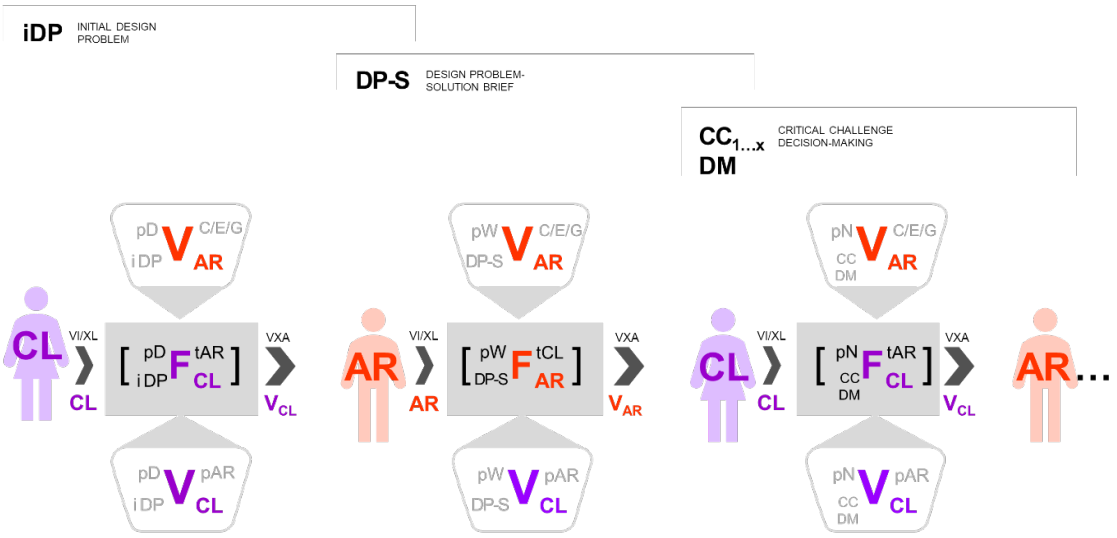


Figure 12 Stages of values influence on frames over time

Frames of the client transmit values information to the architect. Client's values information is received by the architect, then interpreted and translated into frames of the design problem-solution (DP-S), and later of critical challenges (CC1....x). Frames of the architect can transmit client values-related information plus architect's values information back to the client. Architect's values information is received by the client, then interpreted and translated into frames of their values-based reasoning as compelling reasons to change (CRΔ) and the consequent decisions. Frames of the client can transmit values-based reasoning as compelling reasons to change (CRΔ) and the consequent values-laden decisions, expressing critical values [S12].

Element 7: Three main framing interactions

Three main framing interactions were detected: initial/first interaction, subsequent interactions, and consequent decision interactions (summarised in Figure 18). In their initial/first interaction, the Client (CL) approaches the Architect (AR) and communicates an Initial Design Problem (iDP) (Figure 11). During subsequent interactions, the Architect then asks questions and with the client reframes the clients' initial problem framing into a Project Brief, which constrains possible alternatives therefore embedding potential solutions. This is communicated by architects in the Design-Problem Solution (DP-S) stage and associated frames (Figure 16).

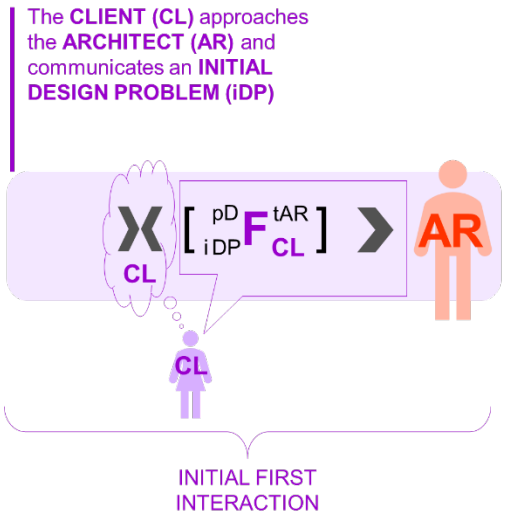


Figure 14 Initial Design Problem iDP

Critical Challenge (CC1…x) frames can also be represented similarly to the Design Problem-Solution (DP-S) (Figure 15). On Consequent Decision Interactions, based on the narrower Design Problem-Solution Frames (and constraining CC frames) the client then decides on a course of action and communicates to the architect a (set of) Decision-Making Frame(s) that include(s) decisions and reasons for them (Figure 17).

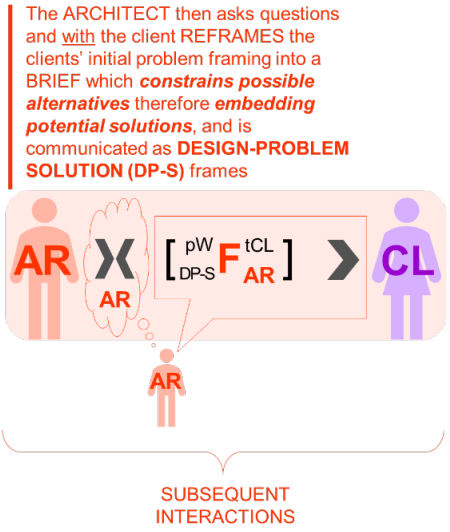


Figure 16 Design Brief and Problem-Solution DP-S

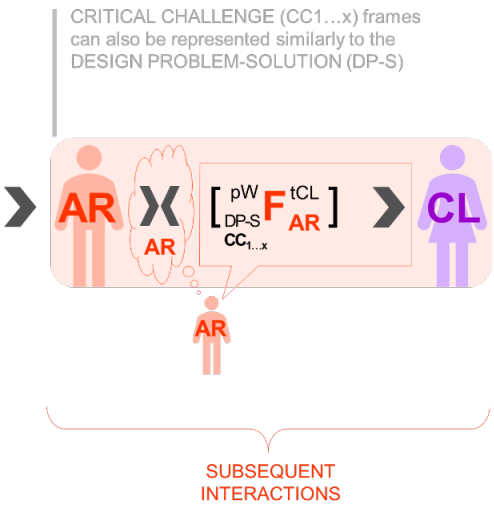


Figure 15 Critical Challenges CC

Each interaction can be represented in two ways. First, as a simplified mathematical formula previously introduced in the Pilot Study.

$$(V_{ar} \rightarrow [F_{ar} + F_{cl}] \leftarrow V_{cl}).$$

This shows architect and client coming together and adopting a joint frame comprised of contributions from each party, on which values influence before and/or whilst the frame is being formulated, negotiated, and/or expressed.

Second, in a graphical formula shown in Figure 18. This shows a basic depiction of the values and the frames components comprising decision-making in order over time.

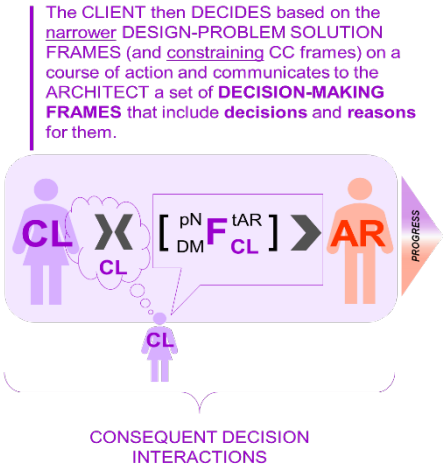


Figure 17 Decision-Making DM

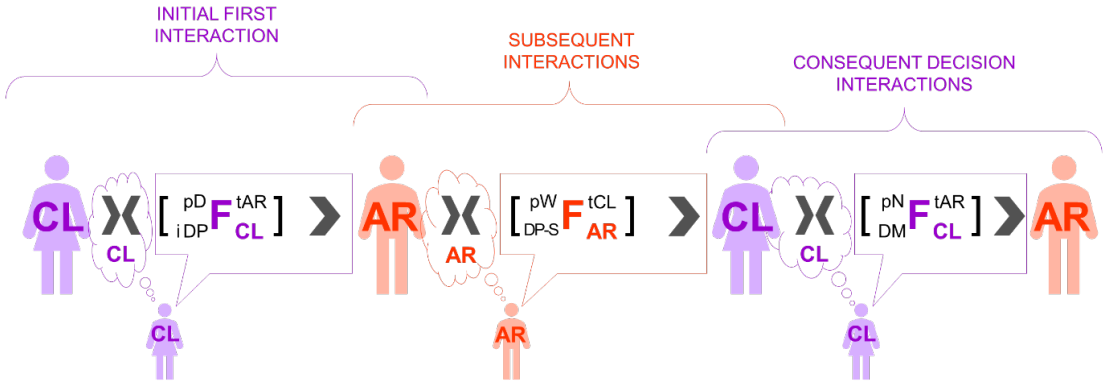


Figure 18 Three main stages of values and framing interactions

Values and Frames interactions can be represented through the ordering of frames over time (Figure 19), including their 'owners' and products or effects as influences and subsequent and consequent frames evolving over time. The relationships between values and frames can be captured over time by showing how frames communicate values and the order of frames that express values of a speaker to a listener who can interpret values through the meaning and emphasis expressed in frames—architects and clients in this research (Figure 20-Figure 21). Thus the relations of values and frames can be characterised as manifesting in context and evolving over time (Figure 22), which can then be mapped along the chronology of a project (§9).

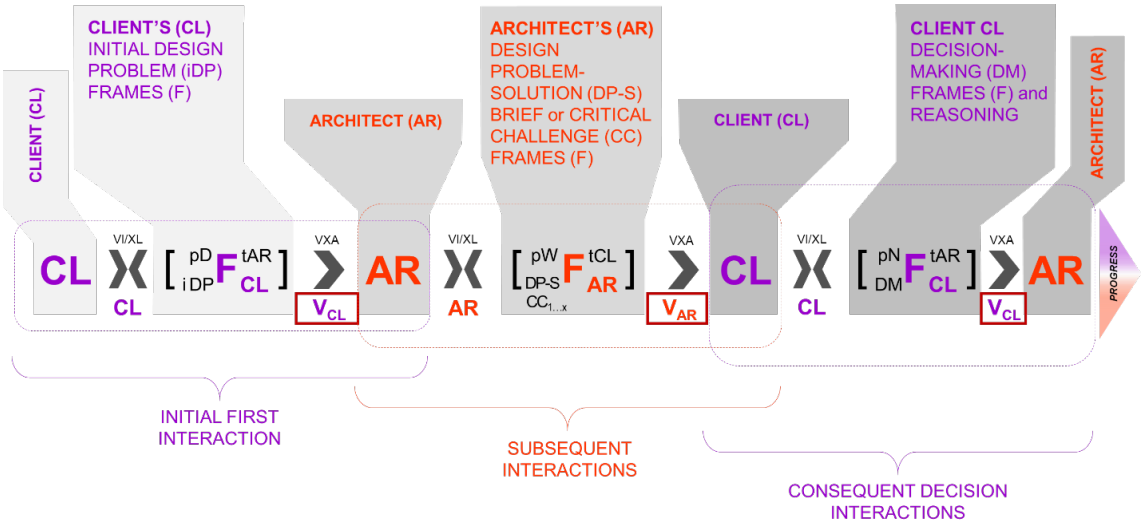


Figure 19 Representing V+F interactions through frames, including their 'owners' and products or effects as influences and subsequent and consequent frames evolving over time.

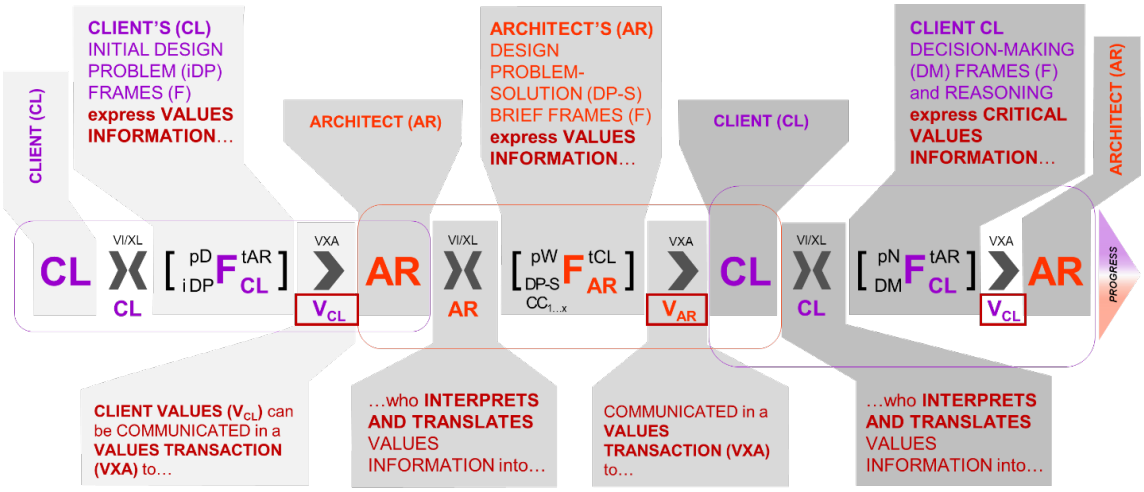


Figure 20 Values + Frames: Interactions and factors 1

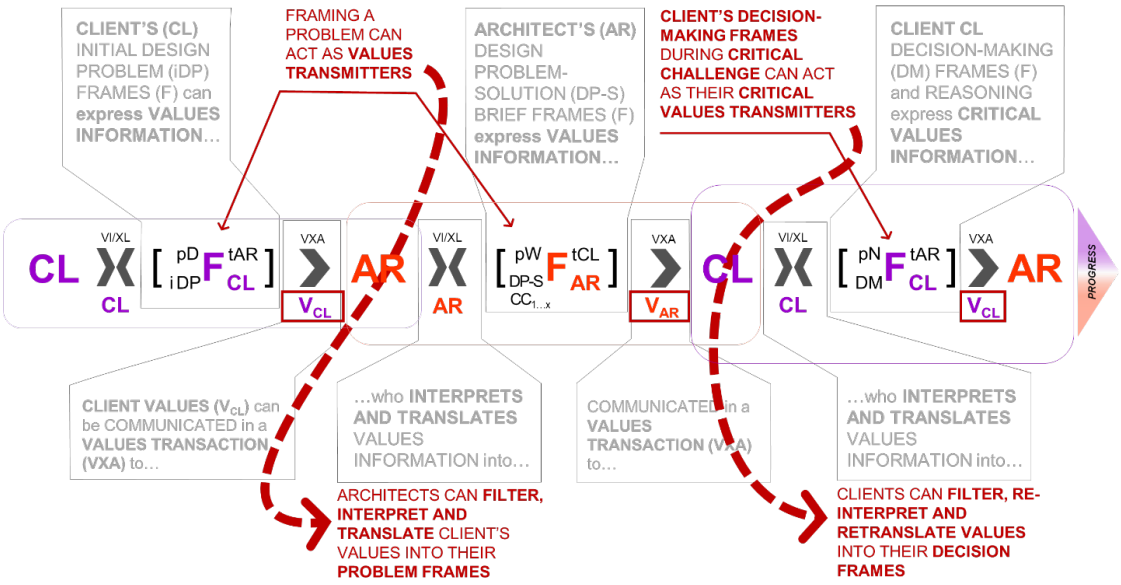


Figure 21 Values + Frames: Interactions and factors 2

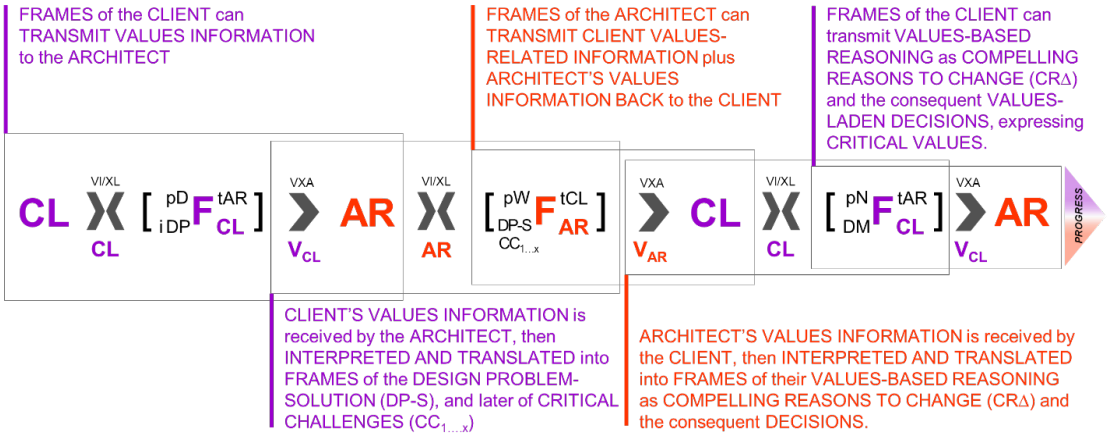


Figure 22 Values Transactions

Element 8: Mapping values and their influence on framing and frames as pathways

By compiling values and frames by Unit-of-Analysis and then analysing and ordering their relations therein and together over time, it emerged that values and their influence on framing and frames can be conceptualised as forming pathways from speaker to listener, from values to frames, over time. This is preliminarily visualised in Figure 23. It was also noted that the 'content' of values typically varied between one Unit-of-Analysis and the next with shifting levels of variation. This is initially captured in Figure 24 suggesting that an individual's values were recalibrating in relation to the frames present in the Unit-of-Analysis.

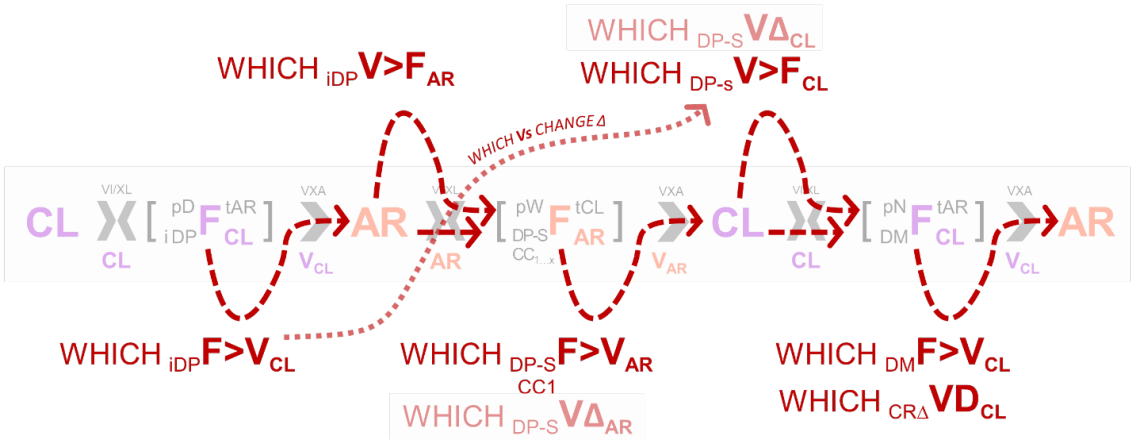


Figure 23 Noting values' potential Influence pathways

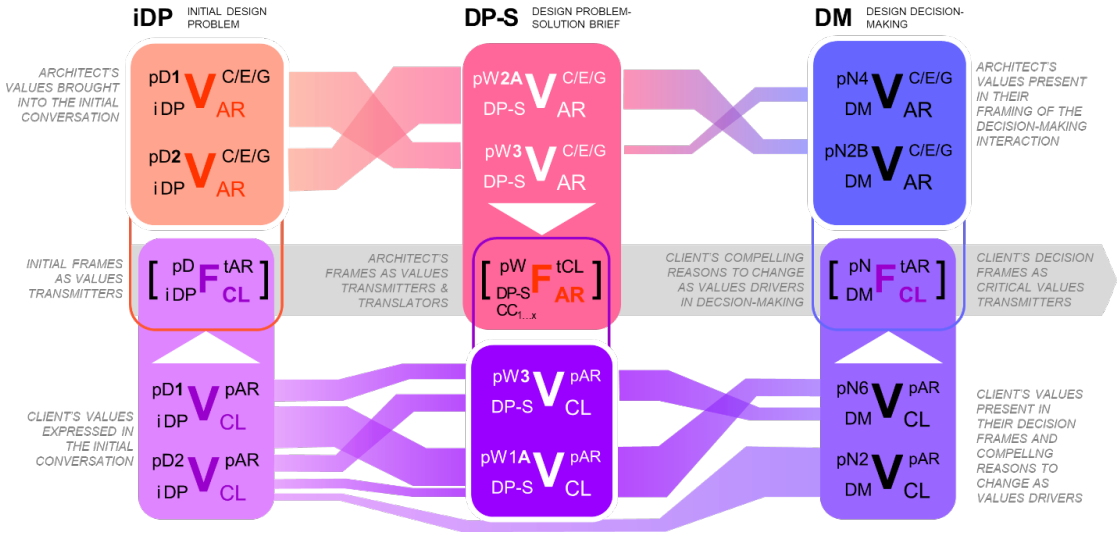


Figure 24 Values influence pathways, Step 1: An Individual's Values recalibrating

A reciprocal pattern was noted that the contextual manifestation of values typically impacted on 'content' of frames which also varied between one Unit-of-Analysis and the next with shifting levels of variation, with Figure 25 depicting what became clearly identifiable as values influence pathways on frames, *and vice versa*. These two layers of values and of frames influences could be overlaid onto the key project framing and decision-making interactions from Figure 18 in a more complete representation of values influence pathways via frames over time, in Figure 26, and a simplified graphical representation in Figure 27.

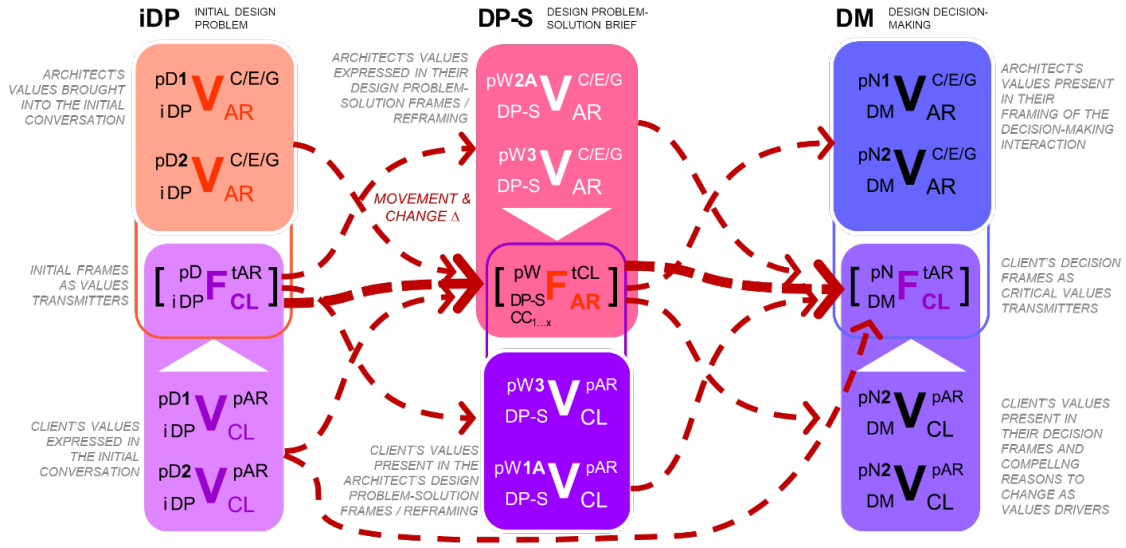


Figure 25 Values influence pathways, Step 2: Values influence pathways on Frames and Vice Versa

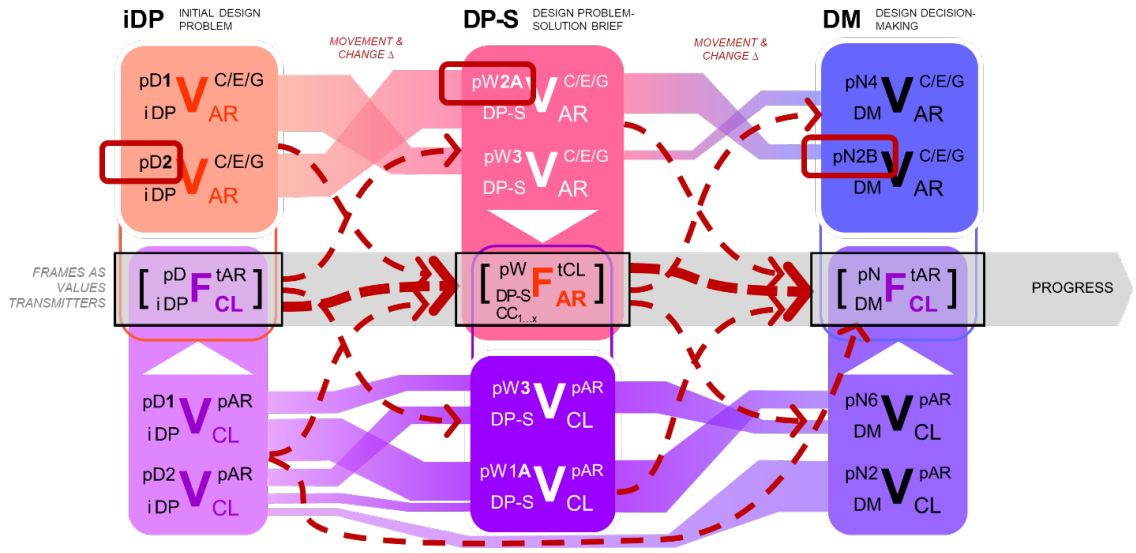


Figure 26 Values influence pathways, Step 3: Complete pathways representation

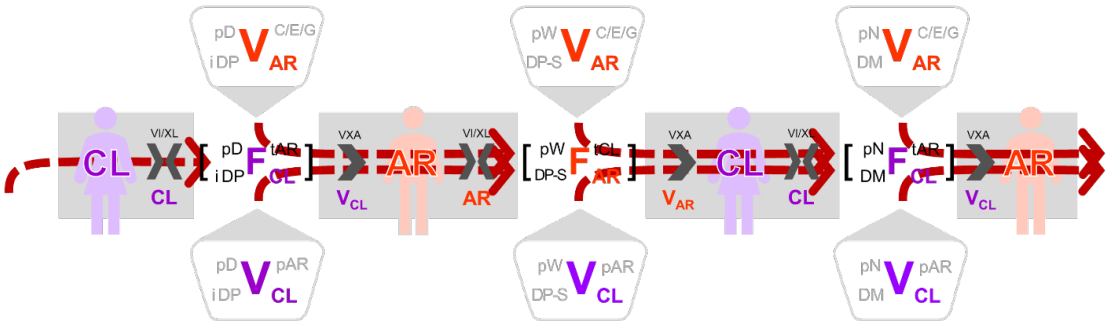


Figure 27 Values influence pathways, graphical representation

Using this method, a typical example 'final' map of each unit-of-analysis in sequence over time in one case is depicted in Figure 28 and all six cases from this study ES2 are included in full in Appendix-6.

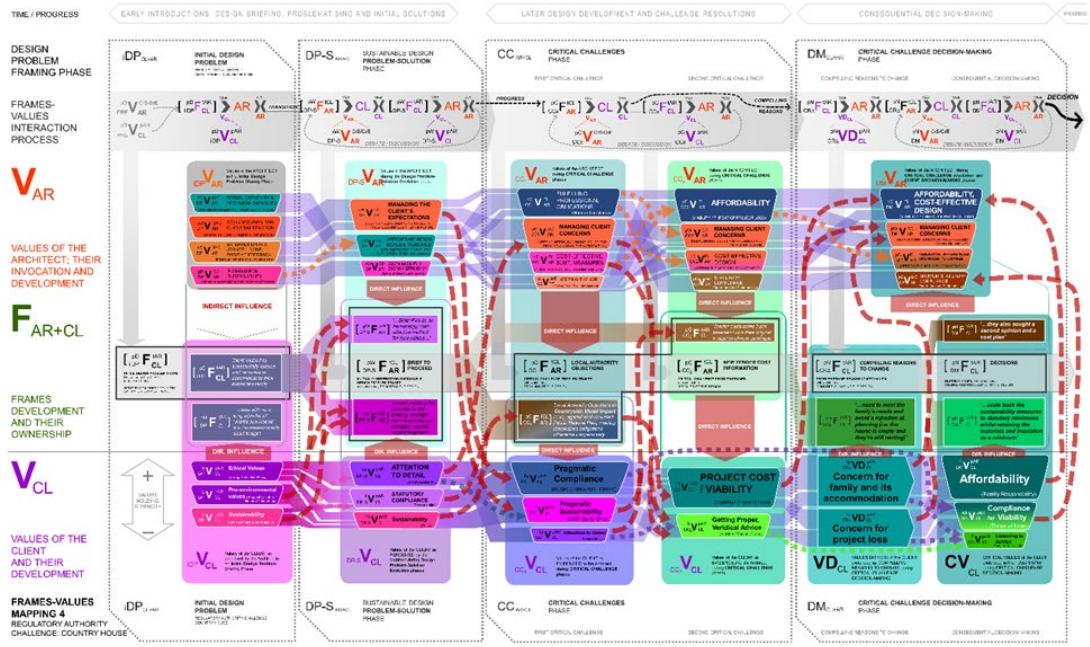


Figure 28 Typical framing experience process map, Case 4: Regulatory Authority challenges, country house client

Taking Values and Frames investigations forward

This section examines how values and frames investigations were taken forward. Key factors found in the mapping and analysis process on which to focus during subsequent research phases are outlined by variable and unit-of-analysis in Figure 29, with a summary composite equation or formula notionally representative of the variables and their ordering over time in Figure 30.

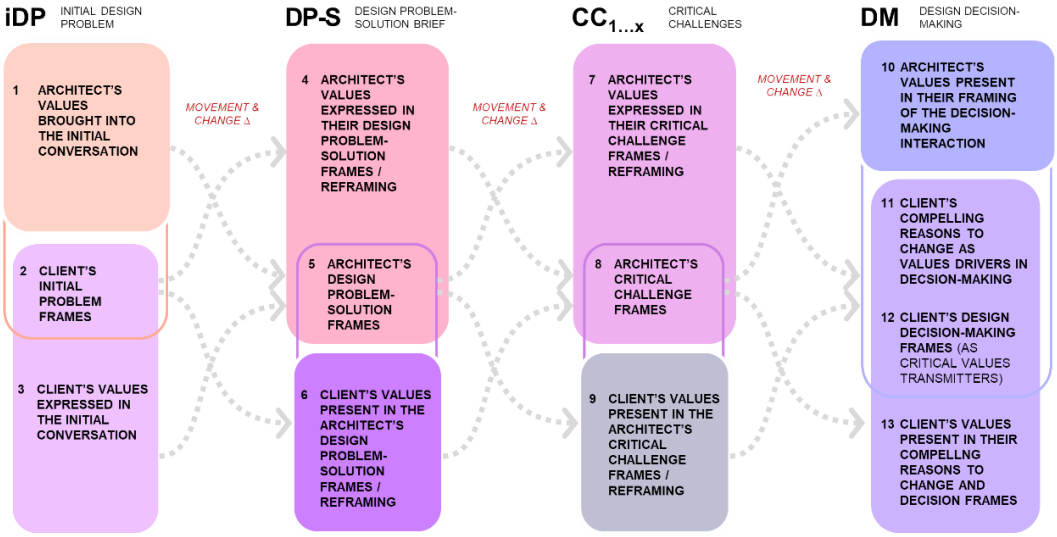


Figure 29 Key factors to focus on in subsequent research phases

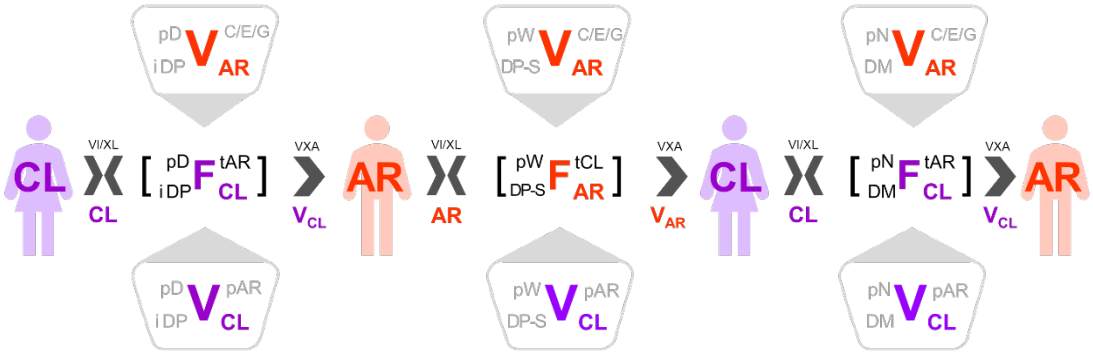


Figure 30 Notional Representative equation or formula

Appendix 4.3 ES3 Additional detail to support the Structured Exploratory Study

Contents

Tables

1. Introduction

This Appendix provides additional detail to support the findings described in Chapter 4, for Study-part ES3a; and Study-part ES3b.

2. ES3a Typical Influences and 'Space for Meaningful Choice' (Additional detail)

This section provides additional detail to support the findings described in Chapter 4.

2.1. Raw Inputs: Values (Additional detail)

To know about the impacts of values and frames in establishing sustainability meaningfully to then make more meaningful choices, I first examined the values of key stakeholders involved in decision-making concerning sustainability. Later I look at the frames used to communicate sustainability and examine them with a values lens to determine the relationships between values and frames.

Values proved to be key in… and were traced directly and indirectly in our interviews. Few select evidence of this can be found in the direct quotes as follows with full details provided in appendix X. it was interesting to observe that… although… . This however shows critical/substantial/significantly important to/ as to…

When asked how and why architects engaged stakeholders a typical response was to, "bottom out some of the broader conditions and constraints either before or whilst sounding them out about their interests [AR07:75-78]". This notion of "sounding them out about their interests" begins to suggest how architects are accessing their clients' and stakeholders' values, which, in a list of interests, may occupy the uppermost priority.

> *"[T]he [Local Council] are quite demanding about sustainability from a planning perspective, so we have to put those statutory constraints to the client almost as a starting point and then work from there [79-81]. […] If the client's reaction is overwhelmingly positive, which it rarely is, and they somehow feel inclined to offer more, then that's a bonus [84-85]. […] Then once we've given them the bottom line, we can assess their reaction to that and maybe push for a little more. But that pushing has to be very... mmm, how can I say it… nuanced and almost empathic, you know, a two-way conversation where we listen first, then start probing, until we get push-back – you know, 'oh, no, we don't want to be putting in wind turbines all over the place…' [AR07:87-91]."*

This is typical of how architects both planned and expected to hear values of their counterparts, but neither parties identified them as such. ARs could recognise when interpersonally meaningful characteristics were present; however, these were identified as 'likability', or 'getting on' with them, or lack of 'push-back' in the above passage. AR07 continued,

> *"I mean, 9-times-out-of-10 the response will be 'ok, how much is it going to cost me?' or 'Can we get it down to 20% social and 10% renewables? You know, 'do we really have to have 10 disabled units? They're massive and I can fit in 15 units if we can argue around them' [AR07:91-94]".*

In this quotation, three client values (V_{cl}) were coded: Cost-effectiveness the first part, Viability second, and Profit last. Whereas the architect may have interpreted: 'cost', 'dislikes sustainability', and 'site maximisation', respectively. I also take this to mean that

generally this architect experiences 'push-back'—resistance to suggestions of sustainability measures from clients who value Cost-effectiveness, Viability, and Profit. However, the priority of these values needs to be seen in relation to other values because of what may be missing from this isolated snapshot on that context, as the case-maps demonstrate.

Appendix 4.1 shows two examples of architect's individual values as lists of coded values statements from architects' interviews. These tables showed that, in all but one example, various instantiations of both Client Satisfaction and Sustainability were either most frequent or high priority for these architects. This presents a significant tension for those whose clients are either less interested in sustainability or more interested in profit and low costs; because responses also converged on the view that sustainability costs money. In addition to the above, other coded values predictably included those in Table 24.

Table 24 Typical VAR

Architects Typical Values
1. Client Satisfaction,
2. Sustainability,
3. Good Design,
4. Good Communication,
5. Responsibility,
6. Working with Likeminded People/Being Liked/Likable,
7. Honesty,
8. Leadership,
9. Practicality/Pragmatism,
10. Intellectual Stimulation/Opportunity.

These are hardly surprising in a services business context. However, this tension between architects' valuing highly both Client Satisfaction and Sustainability presented an opportunity to examine Client's values for value compatibility as an opportunity establishing sustainability meaningfully.

Appendix 4.1 also shows two examples of named stakeholder's thematised individual values frameworks as lists of coded values statements (see Table-A2.7 to Table-A2.12). Unsurprisingly, these tables showed us typical client values including the examples shown in Table **25**.

Table 25 Typical VCL

Client's Typical Values
1. Cost-effectiveness
2. Delivering Value-For-Money
3. Feasibility
4. Financial Viability (and Fundability)
5. Saving Money
6. Fulfilling needs
7. Profit, Return, Turnover, Profitability, and similar variations
8. Statutory Compliance (threat of loss)
9. Tradition/Traditionalism
10. Energy Efficiency
11. Benefits of Sustainability (usually to themselves),
12. Marketability of Sustainability (also Reputation)
13. Sustainability, but only if convenient or easy.

When raised by architects, many clients valued sustainability to a certain extent. The sentiment was captured in an insightful but representative quote, "sustainability was fine if it didn't get in the way of some other picture they had of life (AR03:41-42)". To capture

the broader sentiment, I interpreted this value as 'Sustainability, but only if convenient or easy' (13, above).

Simple generalisations could be made about professional clients and developers with predominantly capitalistic values; public clients with socially-orientated values toward common good and human welfare; and individual private clients with personal or family orientated values. Outliers combine various values from each of these three, or highly-individualised values, such as Biodiversity or Clarity, Legibility. The prevailing values coded from statements about contractors were Client Satisfaction, Minimising Capital Expenditure (CapEx), and Buildability. Again, marginally interesting lists, but unsurprising, and ultimately not very revealing when isolated from choice-space and decision-making contexts.

What was interesting was a clear signal that client values (V_{cl}) are key to establishing meaningful choice, raised by AR07, suggesting that in client's decision-making everything is filtered through values as a screen. He says,

> "…our client contact was keen on sustainability because of their interest in long-term costs, lifecycle, and maintenance, etc.; then everything gets filtered through their screen of Lifecycle cost and maintenance as an end-user, whereas with the contractor, their filter so-to-speak was buildability and [lowest] CapEx… (AR07:344-347)".

On this PFI project, the client and contractor were evaluating success through potentially opposing measures and metrics, all of which affect sustainability, thus echoing the importance of establishing and working with client values to maintain and protect decisions concerning sustainability. By many architect's own admissions, client values (V_{cl}): Minimising CapEx/Cost whilst Maximising Profit versus (V_{cl}): Sustainability are clear candidates for external incompatibility (where V_{cl} and V_{ar} are incompatible), and thereby an internal incompatibility between (V_{ar}): Client Satisfaction and (V_{ar}): Sustainability. But it would be sophomoric to assume that Profit/Cost do not play roles in architects' value systems. Echoed by other architect/business-owners, AR03 said,

> "…at the end of the day, ours is a business. Whether we like it or not. When I came into it, it was a profession. Now it's a business, and I have to stay afloat. I'm not going to spend hours arguing about something that I already know I've lost. I will press things [sustainability] as much as I can, don't get me wrong, I'm not giving up the battle, but I'm not going to spend a whole lot of time trying to convert somebody who, in my opinion, can't be converted [AR03:108-112]".

This presents a significant, incompatibilistic dichotomy between profit-inclined commerce and sustainability in which statements such as the above illustrate the battle being fought both internally and externally, where one must choose. The question remains, how do acts of pushing and converting play out in client interactions? Where is the point of inflection at which a client chooses sustainability and not otherwise? Where does an architect choose to forgo pressure on "clients who aren't interested in sustainability—because there are so many other things you have to deal with as well [AR03:131-132]" and not choose otherwise? I also began to note that where client and architect values were incompatible, significant challenges arose. If decontextualised, unprioritised values impart little else, then contextualising them may bear fruit by recalling the potential role of frames in meaningful choice via values. For if the client is fee-paying, then it is arguable that implicit values include being paid and client satisfaction. This also may imply forgoing one's own values and thence a slippery slope. Thus, intrigue at the point of inflection. Next, I examine communication frames giving context to these values inputs.

3. ES3b Spaces for meaningful choice: Values-and-frames in decision-making discussions

This section provides additional detail to support the findings described in Chapter 4.

3.1. Framing maps with a values lens (Additional detail)

Here I further explain our key findings and examine key supporting findings that are useful to understand our conclusions. Looking at frames with a values lens allowed us to see isolated, individual frames that both communicate values and communicate to values. Sequencing them allowed us to see these effects as natural pathways of values influences through the frames used to set decision problems, communicate information and evaluations towards solutions, then negotiate decisions and subsequent actions based on that framing. Below, each sequence description is followed by explanations of associated key findings.

3.1.1. *[FCL]→(VAR) sequence: Frames communicate values*

First influence sequence. First, I focus on the conversation exchange between architect and client in the first key phases, Brief/Initial Design Problem (DPr/DBr), and Preliminary/Interim Decision-Making (DMi). There I saw that the client's early frames of their design problem included needs, desires, and preferences, communicating their initial values. [F_{CL1}] about 'beneficial use for future generations' activated the architect's previously dormant values (V_{AR1}) 'Concern for Future Generations', preceded by 'Promoting Sustainability', and 'Energy Efficiency', in priority. Having pre-established architects' values through group elicitations and individual interviews, I could see patterns of (V_{AR}) in [F_{AR}]. This suggested that I could also identify (V_{CL}) in [F_{CL}]. For what was important to architects' framing was firstly, the client values they interpreted, and secondly, their own values, both contextually-instantiated.

Frames communicate values. Client's frames [F_{CL1}] also mirror and thus communicate their values, which here verify the architect's values interpretations. In [F_{CL1b}], I coded (V_{CL1}) Beneficial Use (as a family asset); Legacy, Concern for Future Generations (mine, ours) and Family Values; and Sustainability (as a long-standing family farm owner). The priority of values was determined by the quality and strength of their emphasis in conversation, including sign (neg/pos) and directionality (to/away from individual, concept, or decision). Here, [FR] 'Future Generations' activated similar values, *which also activated related values* (VA) 'Promoting Sustainability', and 'Energy Efficiency'. Therefore, this suggested to us that frames communicate values and that client's frames influence architect's values, with sequence notation [F_{CL1}] → (V_{AR1}).

Values-framing=OpMCh. Frames communicating *from and to* values—or values framing—is significant because it signals that, 1) values are being contextually instantiated in conversations, and 2) if detected and understood by speakers, provide opportunities for speakers to reframe sustainability to reflect or respond to those values, thereby creating opportunity for meaningful choice. Analytically, it also provided, 3) a natural language test to triangulate purposefully-elicited values that architects perceived against contextually instantiated values.

3.1.2. (VAR)→[FAR] sequence: Values influence frames' formulation

Listener interpretation. Next, in [F_{AR1}] I saw that, by speaking enthusiastically of multiple forms of 'Energy Efficiency' measures without directly communicating his evaluation, the architect was indirectly or implicitly expressing his own values (V_{AR1}) through his emphasis and phraseology. Here, (VA) 'Promoting Sustainability', and 'Energy Efficiency' precipitated or influenced enthusiastic [FR] 'Energy Efficiency' measures. This

therefore suggests that values can influence frames, (V_{AR1}) → [F_{AR1}]. This also suggests that what matters between two speakers in a decision context is not the presence of all four frame components, but what listeners interpret that then forms the basis of their response-action. Having previously considered that frames contained evaluative components that expressed the speaker's values, I revised our expectations and also looked for listener-decisionmaker interpretations and response-actions.

Practitioner reflection=OpMCh via values detection, communication. In architect's problem-solving, I saw evidence in [F_{AR1-2}] of not simply reaction but practitioner reflection (Schön, 1983), which was *post-factum,* one-sided (versus recounting conversations), and more evaluative. Identifying architect's reflection via framing was significant because it signalled that by active reflection, architects could choose how to conduct architect-client problem framing and formulate jointly-agreed frames for decision-making. More importantly, both active and *post-factum* reflection pose opportunity to reflect on client's statements, assess for values, and respond accordingly by reframing both new information and previously established frames to reflect/respond to (V_{CL}).

3.1.3. [FAR]→(VCL)→[FCL] sequences: Problem frames influence decision frames via values de/activation

Most important sequence. The architect's (over-)enthusiastic framing of multiple energy efficiency measures [F_{AR1}] triggered a shift in client values ($V_{CL2,3}$) to '*Best* Beneficial Use' and '*Practical* Family Values' (shifts italicized) that precipitated their budget request [F_{CL2}]. Altogether this suggests that architect's frames can influence client's values, [F_{AR1}] → ($V_{CL2,3}$), thereby precipitating or motivating client's action, sequenced as [F_{AR1}] → ($V_{CL2,3}$) → [F_{CL2}]. This interaction also shows how the client's decision frames (last rows) resulted from contributions by both client and architect. Here, [FR] multiple energy efficiency measures triggered a shift to (VA) *Best* Beneficial Use and *Practical* Family Values leading to [FR] budget request. Importantly, I detected that this and the last patterns were linked and repeated serially over time, from [F_{AR2}] through (V_{CL}) instantiations and recalibrations to the client's final framed decision [F_{CL9}]. This signalled an important sequence (SEQ2) and serialisation, leading to the final form of framing-conversation map**Error! Reference source not found.**. Relatedly, AR07 suggested that in client's decision-making everything is filtered through their values.

> *…our client contact was keen on sustainability because of their interest in long-term costs, lifecycle, and maintenance, etc.; then everything gets filtered through their screen of lifecycle cost and maintenance as an end-user. (AR07:344-346)*

Altogether, I took this as a clear signal that client values (V_{CL}) were key to establishing meaningful choice, but frames can trigger shifts in values. In our case, such shifts resulted in sustainability reductions through cost-based interpretation of sustainability frames' meaning, and others followed.

3.1.4. [FCL]→(VAR)→[FAR] sequence Decision frames influence later problem frames via values

FCL express VCL. When the client's request was framed as 'Budget' [F_{CL3}][8], it was interpreted negatively as seeking low cost or looking for cheaper options, so this activated the architect's values (V_{AR2}), Cost Efficiency, and Keeping the Job, which then drove his framing [F_{AR2}] of 'good options…' with 'probably a bit ambitious…'. This supports the view that client's frames can influence architect's values which motivate their action, or [F_{CL3}] → (V_{AR2}) → [F_{AR2}]. Here, [FR] Budget activated (VA) Cost Efficiency, and Keeping

[8] i.e. it was not framed more neutrally as 'cost plan', which is more commonly used and less likely to resonate negatively.

the Job, driving [FR] 'good options… a bit ambitious…'. This drove the client's later frame [F_{CL4}], expressing 'need' in relation to—or framed by—their values (V_{CL4}) of Beneficial Use, Practicalities, and Cost/Spending. This reinforces the view that frames can express values.

Values functions. Through mapping values and frames together, I clearly saw that values function as drivers and moderators of behaviour via interpretations of value in/compatibilities. Frames of 'High Energy Efficiency' appealed to the client with 'Family Legacy' and family/business sustainability values, but were moderated by their later cost-specific values of 'Spending/Practical Budgeting', and 'Cost Efficiency' associated with their drive for personal (financial) gain from the 'beneficial use' of a disused outbuilding. It suggests that this moderation was driven by their pragmatic or practical-orientated values as farm owners. With values of 'Energy Efficiency' and 'Concern for Future Generations', this architect initially responded well to this client with similar values. When similar values were recognized, the architect responded appropriately. However, when either differences in values or challenges to the project were detected by the architect, they responded with disdain or disapproval—such as when the client flipped or reneged on their previous decisions in favour of sustainability. It suggests that this architect's response was based on an interpretation of value incongruity or incompatibility, also suggesting that the architect internally reframed the client's values with a negative evaluation.

3.2. Reflection (Additional detail)

In the quest to find opportunities for meaningful choice about long-term project impacts concerning sustainability, a novel approach to study architect-client decision-making conversations with a composite lens of frames-and-values was demonstrated. For this, I sought and detected natural pathways of values influences via the frames used and interpreted by interlocutors, from initial architect-client introduction, to interim decisions, later critical challenges, and final agreed sustainability measures. One worked example was shown in Table 2. By discretising and focusing on individual frames and values coded as single statements in a conversation sequence, I have developed a picture of the interactions between values and frames in the project decision-making process. To systematically understand values influence pathways, I first identified two mechanisms of influence, 1: $(V \rightarrow F)$, 2: $(F \rightarrow V)$, then contextualized them by their natural, logical sequencing:

$$\text{SEQ2c: } \big((V \rightarrow F)_{AR} \rightarrow (V \rightarrow F)_{CL}\big).$$

From the data, it was obvious that the frames architects used to characterize an issue concerning sustainability, e.g. positive or negatively, were influenced by their values brought to or instantiated in conversations. Then, by clients interpreting value in/compatibility, those frames influenced client's consequent framed responses. Serialising this pattern showed complete values influence pathways between architect and client via frames through one project, and therein opportunities for meaningful choice.

Opportunities were clearly created or constrained during each architect-client discussion concerning sustainability, dependent on whether client values were detected and information/issues were framed compatibly with them. The key points for meaningful choice occurred when the architect-speaker's frames interacted with client-decisionmaker's values: frame compatibility with values garnered favourable responses and vice versa, regardless of whether client values were obvious to architects, or dormant and appeared unexpectedly during critical challenges. Informed by the architect's framing of chosen information and issues, the final choices were the clients', and their meaningfulness determined by the extent to which choices reflected values. The unexpected reprioritisation by critical challenges suggested that framed issues of 'unnecessary' cost and later planning objection triggered the client's response to risk and conflict, consequently modifying values instantiations, priorities, and subsequent decisions.

Altogether, this shows that meaningful choices were those aligned or compatible with values; opportunities to establish meaning consisted in first establishing decision-maker's values and then compatibly re/framing choice options accordingly. These first framing process map findings indicate that architects' values were acting as drivers, moderators, and modifiers of their framing behaviour; so too were client's values acting as drivers, but also mediators of their framed decision-making behaviour. More broadly, I interpreted the decision-communication process as co-constructed meaning-making, in which decisions were comprised of contributions from multiple parties—but the locus of meaningful choice remained within architect-client interactions. Decisions linked to values thereby hallmarked meaningful choice.

Feeding these findings back to architects is straightforward because those I interviewed were already using values and frames, but inexplicitly and often unknowingly. Being more aware of these underpinning mechanisms and their effects, architects and stakeholders can work toward more meaningful choices that better reflect the longer-term impacts of their project decisions. Acting on these findings, interested parties can provide space for more meaningful considerations regarding the longer-term by understanding and contextually reframing potential consequences of decisions to resonate more strongly with their values, knowing that challenges can recalibrate and reveal core values.

4. Study ES3 Conclusion (Additional detail)

This work demonstrated a new understanding of human values' influence on the dynamics of interpersonal interactions concerning building sustainably via decision problem and decision communication frames. A working method was demonstrated to analyse spaces for meaningful choices from architect's richly-described discussions with clients and stakeholders.

After exploring different ways to understand meaningful choice through a values lens, I found it useful to conceptualize decision-making as a temporally-extended communication process. A compound values-and-frames lens demonstrated usefulness as both an important locus and mechanism where opportunities for meaningful choices can be made. In tracking the natural pathways of values influences through typical interactions via problem and decision frames, the dynamics of those various human values manifested along sequentially-linked discussions to the output of context-specific, framed sustainability decisions. Seeing this process as co-constructed meaning-making, human values are thus related to preliminary decisions concerning sustainability, and then to decision shifts, influenced by and influencing frames of the discussions involved. The research therefore provides a novel approach using a composite values-and-frames lens to understand sustainability decision-making practices over time via decision formation, shift, change. This is likely to be more widely applicable by extrapolation to other cases and situations that involve deciding about sustainability.

These findings mean that meaningful choices concerning sustainability were those aligned or compatible with values, regardless of whether those values were readily apparent. Knowing this, the main message for professionals is to subjectively link decision-makers' values with longer-term sustainability outcomes in contextually enduring ways through subjectively-responsive framing/reframing of sustainability issues. For researchers, this means patterns of successful interpersonal decision-making can be traced through values-and-frames sequences to final framed choices as outcomes of decision-making processes. This approach opens an interesting agenda and can now be applied more widely to focus on studies of values influences on and via frames, and to raise awareness of influence principles and meaningful choice spaces.

Appendix 4.4 MA3 Systematic Influence Mapping

Contents

Tables and figures

Introduction

The mapping method trialled in MA2 with Group-G2 and reported in ES2 was based on an initial idea that values influenced the joint or shared frames negotiated between parties, e.g., architect and client, extending an idea deducted from existing literature on product design students (Hey et al., 2007) with values influences. However, this posed a conceptual and predominantly epistemological challenge, whereby it was impossible to determine whether such frames were truly shared in the parties' minds, objectively. Equally importantly, not only might the prior-deducted relationship not necessarily hold for AEC projects, but also such an approach to applying prior-deducted relationships is potentially at odds with the inductive, grounded approach and philosophical scaffolding (Figure 31) adopted. Based on a combination of the relative constructionist epistemology making this logically inadmissible, and the need to record and demonstrate a more systematic and indeed fully grounded inductive approach, further examination of *both* Groups G1-G2 data was undertaken in a more structured exploratory study, ES3. Hence, the MA2 maps and method were conceptually 'bracketed' or frozen and effort redoubled to refocus on 'what the data was saying' in true inductive analyses. Having identified the role and potential significance of values and frames influences amongst other influences in study-part ES3a, ES3b and MA3 set out to more systematically analyse and map values and frames influences. This appendix reports the complete mapping steps as outlined in the Table of Contents above.

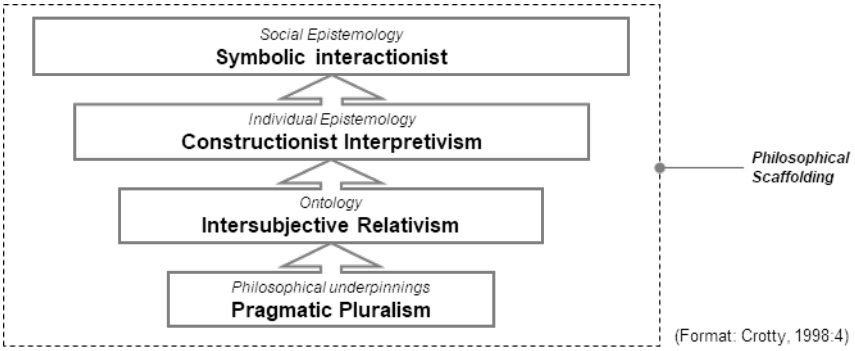


Figure 31 Philosophical scaffolding

Influence analysis approaches

1.1. AN1 Preliminary Influence Analysis: Inductive and deductive coding

Because the overall objective was to explore the influence of values and frames in the whole decision-making process, many broad and open-ended questions were asked. Interviews were sometimes sprawling, which made it challenging to immediately and straightforwardly pinpoint influences of values and frames through transcript coding. This meant that responses about one project/client were given to several questions and spread throughout the interview. This also meant that sometimes the evidence provided by an architect for one client/project was incomplete, because a) it was not initially known precisely how to generate data that would provide evidence for frames, values, decisions

(F, V, DM), and the relation of influence ($\leftrightarrow$ *or* $\rightarrow$), and b) responses were both broad and specific, generalised and particular. Therefore, it was necessary to systematically audition and record different approaches to identifying and mapping the values and frames relations involved between architect and client in one project, as well as the interactions between values and frames in the context of decisions and their outcomes. Examining these would also need to later search for evidence about the provision or constraint of choice space. Once the transcripts were thematically analysed, various ways of mapping the analysed data were trialled.

First, the variables of values and frames were coded and populated into tabulated lists, with some typical examples shown in Table 27-Table 26, and a detailed coding shown in the tables overleaf. However, in this format, they lacked any evidence to demonstrate relations of influence. They lacked descriptive strength without contexts, characterisations, outcomes, and interconnections or relations. The transcripts were then analysed and coded inductively for any patterns and/or relationships in §1.3-1.4 guided by grounded thematic analysis and relational analysis, a concentrated form of thematic analysis focused on identifying and mapping relations between concepts, themes, and categories (as Braun and Clarke, 2006; Charmaz, 2014; Carley, 1993; Carley and Palmquist, 1992) (see Chapter 3 and Appendix 3.3).

Influence mapping was initially re-trialled in simple tabular form (§1.2), then mapping the relations of variables trialled in an application inspired by values equations (e.g., Kahneman and Tversky, 2000; Mills, 2013) in various scenarios (§1.3-1.4), followed by hybrid tabulated relational matrices (§1.5). But these insufficiently demonstrated the relation of influence because not enough was known about the mechanism of influence as a relation between variables. So multiple approaches were trialled to analysing for and mapping influence (§0), and ultimately mapped into hybrid tabular swim-lanes inspired by BPMN (§0).

Table 26 Typical Client's Values V_{CL} (Group-2)

Typical Values, in order of frequency
1. Cost-effectiveness
2. Delivering Value-For-Money
3. Feasibility
4. Financial Viability (and Fundability)
5. Saving Money
6. Fulfilling needs
7. Profit, Return, Turnover, Profitability, and similar variations
8. Statutory Compliance (threat of loss)
9. Tradition/Traditionalism
10. Energy Efficiency
11. Benefits of Sustainability (usually to themselves),
12. Marketability of Sustainability (also Reputation)
13. Sustainability, but only if convenient or easy.

Table 27 Typical Architect's Values V_{AR} (Group-2)

Typical Values, in order of frequency
1. Client Satisfaction,
2. Sustainability,
3. Good Design,
4. Good Communication,
5. Responsibility,
6. Working with Likeminded People/ Being Liked/Likable,
7. Honesty,
8. Leadership,
9. Practicality/Pragmatism,
10. Intellectual Stimulation/Opportunity.

Client's Less Typical Values
1. Competitiveness
2. Business Growth
3. Environmental Responsibility
4. Sustainable lifestyle
5. Working with Like-minded People
6. Human Welfare
7. Personal Legacy
8. Lifestyle Status, Reputation
9. Responsibility
10. Buildability
11. Maintainability.

1.2. AN2 Preliminary tabular maps

The next step was to understand how $(V + F)$ relate to each other and to DM, decision-making/decisions. The first considered was to examine the immediate project context around the time when architects discussed that $(V + F)$ were present, which was sometimes spread out in an interview. This pointed to the next step, to examine the timing of $(V + F)$. Identifying the immediate discussion context provided more complete

pictures of values and frames interactions, the timing showed temporal sequences. With the analysed and thematised transcripts, several methods were then trialled to tabulate and present contexts. It was found that without timing, they lacked evidence of complex influence patterns or sequences. These steps are described as follows, with the tabular maps of referenced examples alongside other typical examples in the PDF Map Annexe in Appendix 6.

Tables of values and frames were mapped with timings of their instantiations (i.e., project stages), starting with values. From AR08, 37 different individual values we coded in context, and 41 stakeholder/client values. To test the methods, mapping started with the architects with fewer values, starting with AR03, after which we could return and do the considerably longer lists from AR08. The values timings mapping exercise pointed to discrete points or phases/stages when and how values were instantiated, but lacked the impact/outcome, or detail of the context, which had hoped would show influence pathways. To add more context around the value instantiation, AR03-VSHv2 included a final column that included the client values statement in interview context. This showed that values interpreted in a project were not only associated with a context, but also framed in context specific language. This mapping of complete framed-value packages or values envelopes (AR03-VSHv2) showed context and started to indicate the complexity and situatedness of both individual discussions and together linked chains of discussions composing an entire project (albeit multiple projects and clients) for one architect. This also started to point to the potential for rich detail to elucidate more about relations. But the method of tabulating this information was inadequate to show relations. We iterated to AR09-VAR with frame-packages of values instantiations and their timings including outcomes and analytical observations with comparable results to AR03—relations/influence were evasive. With AR09-VSH, one AR-CL project/discussion was well-detailed. But the method of tabling/mapping/communicating data omitted which client, or how specific frames affected the client for a specific outcome. Outcomes were sparsely detailed but present, so we trialled mapping the richest, AR09-VCL-CL03. It provided enough detail/material to map a single client-project from brief to final DM. But we still found that these mapping methods struggled to identify both context and relations that we considered key to unlocking pathways of values influences.

To explore richer detail, we returned to the longest, most richly-detailed interview. AR08 shared richly-detailed accounts of precise interactions with specific clients on uniquely identifiable projects and their explicit timings; so too did AR09, but less so. Interestingly, as the interviews naturally proceeded from 01-10, so too did their richness as we began to understand how to interview for $V, F, DM\ and \leftrightarrow$. This opened several worthwhile avenues for further exploration and unlocked answers previously obscured by partial pictures of values and frames in AR+SH interactions, longitudinally.

Starting with AR08 and their client, CL03, iterations v1-v3 showed consecutive trials of mapping values instantiations until we arrived at the realisation that it was unclear precisely how values and frames were related. With AR08-CL03v3 it was unclear where to 'put' frames: before or after values. The thematic analysis returned categories that were initially difficult to relate to each other as mere lists. Even as increasingly complex tables that allowed us to compare rows and columns of data, they produced little evidence of relations. What was initially elusive in these tables became evident when we stepped back to examine the nature of architect-client communication, naturally and logically.

1.3. AN3 Variable Relation Scenarios

To get from instantiation and timings to influences, we mapped several scenarios of how influence might manifest. Because literature and findings from our earlier stage analyses identified that values and frames are related to each other and decisions, we wanted to know more detail about the relations between both values and frames as influences, i.e.

one variable (V) is related to the second (F) via the relation of influence ($V \leftrightarrow F$). So we stepped back and considered ways they could be conceptualised most effectively in decision-making.

An approach was needed to disaggregate and map the variables in ways that presented pathways and relationships of influence. We developed three potential natural scenarios to help us theorise possible relationship sequences and then analyse the data to test those relationships. The lists of frames and values analysed through previous methods were used to examine various relationships for the most plausible explanation, i.e. whether related or not, and if so, as a relation of influence or otherwise.

The Main Quest was to determine the role of values in sustainability decision-making. But we now know that frames act as mediators, and that values and frames together might be affecting decisions and, thereby, project outcomes. In the most basic scenario,

SCENARIO-1: $[\boldsymbol{F}_{ar} \rightarrow \boldsymbol{DM}_{sh}]$ (direct effect, DM is Value-free)

e.g. Frames (of the architect) directly influence Decisions (of the stakeholder), and decision-making is entirely value-free—there is no meaning, significance, or worth of one outcome versus another; something akin to chance or random selection. This seems possible but unlikely, given Kahneman and Tversky's (2000) past work on choices, values, and frames, among others. Another more likely alternative identifies values as mediators in decision=making.

SCENARIO-2: $[\boldsymbol{F}_{ar} \rightarrow \boldsymbol{V}_{sh}]$ and $[\boldsymbol{V}_{sh} \rightarrow \boldsymbol{DM}_{sh}]$ (chain link, or $[F_{ar} \rightarrow V_{sh} \rightarrow DM_{sh}]$)

e.g. architects' Frames influence Stakeholders Values; Stakeholders values influence their Decisions. But this suggests that Frames are constructed or communicated value-free, i.e. the speaker imbues the frame with no meaning of their own and only communicates raw data. This seems possible, necessary and sufficient for project decision-making, but unlikely. A third more likely alternative identifies both values and frames as mediators.

SCENARIO-3: $[\boldsymbol{V}_{ar} \rightarrow \boldsymbol{F}_{ar}]$ and $[\boldsymbol{F}_{ar} \rightarrow \boldsymbol{V}_{sh}]$ and $[\boldsymbol{V}_{sh} \rightarrow \boldsymbol{DM}_{sh}]$
(chain link, or $(V_{ar} \rightarrow F_{ar}) \rightarrow (V_{sh} \rightarrow DM_{sh})$)

e.g. architects' Values influence their own Frames; then, architects' Frames influence Stakeholders Values; Stakeholders' values influence their Decisions. This suggests that Frames are not value-free, i.e. speakers imbue frames with some meaning of their own and communicate both raw data and characterisation, colouring, 'slant', or 'spin'. This seems possible, necessary and sufficient, plausible and likely. To determine which scenario was a more accurate reflection of reality for our participants, we first considered how to analyse the data for [discrete variables with their] relations. This also allowed us to see other instantiations of variables that were not previously evident through thematic analysis.

1.4. AN4 Relationship Analysis

To analyse for discrete variables with their relations, we first examined potential methods to analyse for variables and their relations. We wanted to know if/how communicating SD also established its meaning and import [F-AR_SD] for SHs with certain (perceived) values V-SH and thereby facilitated decisions in favour of, or against, SD [F►V►DM]. Later, we could establish any link between decisions [SH-DM_SD] and their outcomes [DM-O]. But we also wanted to know how values are made manifest in a project context via the discussions between key stakeholders through the frames used by interlocutors, i.e. do frames communicate values [F<V]? We therefore wanted to identify values in frames V→[F], and to detect false-positives [¬V►F] or [?►V]. We saw in §4 that the use of

language in these ways gave sustainability a character or colour—'spin'—that was not already present if only the raw data was presented//communicated. We conceived that it was this process of giving raw data a character that imbues it with the speaker's values and thereby recalibrate the meaning. By emphasising a certain phraseology, timing, and context, speakers effect a certain outcome (and communicate their values). For the listener-decisionmaker, both raw (value-free) and characterised (value-imbued) frames of SD hold meaning and therefore import and value. It was to these frames of SD that listener-decisionmakers respond when decision-making [F►V►DM].

If so, values could be identified (in context) by, 1) asking for values, 2) asking for $\boldsymbol{F}^{sd}$, and 3) examining $\boldsymbol{F}^{sd}$ for values content via Thematic Content Analysis (TCA) (Krippendorff, 2004; Cornelissen and Werner, 2014). We therefore needed to examine interviews that captured for a single client-project, a) the architects' values (V_{ar}) and frames [F_{ar}], and b) the (perceived) values and frames of stakeholders (V_{sh}) and [F_{sh}] but within the same discussion, time-period, or project phase. V_{sh} were established through the frames that stakeholders used to communicate their decisions to architects $\left(F_{sh}^{DM}\right)$. We also detected values through the frames that architects use to communicate sustainability to stakeholders, and the researchers, using FRAME-VALUE MATCHING ANALYSIS with their values previously established via direct elicitation in interview and focus group. However, we only knew this once we had the lists of values and lists of frames, because values were detected in the frames listed in tabular form in the analysis matrices (e.g., see Appendix-4.1).

We tested this method first with architects' values to capture V-AR and F-AR_SD, then through TCA whether V-AR were present in F-AR_SD. This could then be cross-checked against all the values data to build up a picture of both idealised and contextualised values of a speaker, and value interrelationships through the frames used and when. Where and when SD was framed could also reveal how values related to how ARs conducted the process of SH-Engagement. To detect false-positives in the F(V) identification method, a Logic Analysis was conducted across all forms of values data to cross-reference whether the value was the speaker's and indeed appeared in other contexts.

Returning to our main quest, [F→V→DM] how does the way SD is framed to SH's with certain Values affect SD DM-Outcomes? One way to understand this is to determine whether SD has been framed in a way that is compatible/incompatible with V-SH. To know this, we examine architects' frames of sustainability ($\boldsymbol{F}_{ar}^{sd}$) for stakeholder values $\boldsymbol{V}_{sh}$ compatibility. To know values compatibility, we must know the <RELATIONSHIP> between $\boldsymbol{F}_{ar}^{sd} \leftrightarrow V_{sh}$; if frames reflect values or exhibit a relationship of sympathy, harmony, congeniality, appeal, interest, attraction, entreaty, then compatible; else, less/no compatibility. This initially suggests a range of compatibility.

> #PROOF: Where $\boldsymbol{F}_{ar}^{sd}$ <reflect/appeal/compatible> V_{sh}, yes; else, no.
>
> #EXAMPLE: AR hears V_{sh}: saving money to look good for shareholders. AR says F_{ar}: 'We think spending now on solar PVs gives you the best value-for-money and lowest initial capital expenditure'. Compatibility: high potential for interest, attraction; harmonious.

With this we returned to the data and began to map and analyse for variables and their relations.

1.5. AN5 Analytical Mapping

As previously mapped, AR08-VCL-CL03v2 initially appeared to be different values because of the listing method. On further examination, several values could be clustered together under a uniting 'value theme' which instantiated differently depending on the context.

This context was usually initiated by a stakeholder's decision/choice proposition of the client framed in a way to elicit or provoke a value-laden response/decision. Both intentionally and unintentionally.

Thus, through the foregoing AN2-AN3 process of disaggregating, discretising, and interrelating variables, by 08-SSS-VCL-FHOv3 and v4, we were able to detail the recalibration of values instantiations and their priorities. Considering that $F \rightarrow V_{cl} \rightarrow F_{cl}^{DM}$ we trialled AR08-VCL-CL03v4 in that sequence. Incorrectly positioning F_{AR} and F_{CL}equally before V_{CL} in v4 gave rise to the realisation that they are qualitatively distinct and temporally mediated by V_{CL} with the product of F_{cl}^{DM}, i.e. $F_{ar} \rightarrow (V_{cl} \rightarrow F_{cl}^{DM})$ shown in v5, and not $(F_{ar}\ or\ F_{cl}) \rightarrow (V_{cl} \rightarrow F_{cl}^{DM})$ shown in v4. This is important because it shows that the relation of influence is evident in the sequence of architect's speech affecting client's values which then effect client's decisions that are communicated via frames. These frames, we show, simultaneously communicate both raw choice information, 'yes' 'no', and the evaluation that their choice is preferable to any other choice and perceived outcome, and therefore valued more. The decision implicitly communicates the values. This much can and has been demonstrated in AR08-VCL-FCL03v5. Comparisons with other client values information may also provide architects with working pictures or heuristics with which they then continue to frame and reframe information to achieve desired effects and outcomes. However, it has not been possible to provide evidence of this with the current data. Later, we return to it to map and analyse any client-project cases that have been captured through the richest interviews with this pilot case group.

Preliminary influence mapping: V+F interaction lens

In the quest to identify opportunity for enriching choice space, we think that the spaces to establish meaningfulness relate to influences between values and frames in decision/communication processes, but have not yet established reliable means for identifying influence pathways. Initially showing that frames convey meaning imbued in raw information by the speaker, the way sustainability is framed affects both the provision of meaningful choice-space and the outcomes of choice—decisions—via the values of the speaker and listener-decisionmaker, respectively. An important insight would be to show not only the mechanisms of influence, but which frames affect which values and decision outcomes. From this we could communicate more broadly that for certain indicators detected early in a discussion, the use of a type of frame and discussion content under a set of circumstances/context should lead improved or detrimental outcomes for sustainability impacts. The significance of such an insight would rest in the multipartite presentation of process/pathway, content, mechanism, and outcome. For it would represent a crucial step in simultaneously generalising and contextualising evidence for the effects of values and frames together in choice spaces and their decision outcomes. This Part 2 communicates several trials in that quest. Most importantly by looking at the data with a lens of V+F interactions permits seeing pathways of influence.

To locate spaces where meaningful choices are made and missed, we still needed to systematically establish $(F \leftrightarrow V \leftrightarrow DM)$ sequences and interrelations towards identifying any presence of influence. The data were re-examined by looking at the same decision process through a lens of interactions between frames and values. There, we saw a more contextual and nuanced story about values influence pathways via frames.

1.6. Influence Mechanism

In the quest to identify opportunity for enriching choice space, we have shown that the spaces to establish meaningfulness relate to influences between values and frames in decision/communication processes, but we have not yet established reliable means for

systematically identifying influence pathways. Asking about influences did not provide systematic evidence for the influence of values on meaningful choice-space. Lists of raw inputs also lacked both interaction and context that could help understand interrelation and sequence. However, by introducing the mechanism that frames convey meaning imbued in raw information by the speaker, we have initially seen that the way sustainability is framed affects both the provision of meaningful choice-space and the outcomes of choice—decisions—via the values of the speaker and listener-decisionmaker, respectively. To know more about influence pathways, we chose to further examine the mechanism of influence.

This mechanism implies that if frames convey speaker's meaning, then the speaker's values may influence their frames, $(V \rightarrow F_{speaker})$, because values, by definition, signify what is most worthwhile, meaningful, and significant. A speaker may communicate/frame issues in ways that are more meaningful to them to align potential future outcomes with their own values via influencing decisionmakers with their frames. To demonstrate this relation would require a comparative analysis of a speaker's values and their frames to detect similarities. The mechanism also implies that the speaker's frames may influence the listener-decisionmaker's values which, by extension of the previous point, influence the listener-decisionmaker's frames,

$$(F_{Speaker} \rightarrow V_{Decisionmaker} \rightarrow F_{Decisionmaker}).$$

This also implies that decisions (as outcomes of choices) are also naturally frames. Here, by decision frames, the decisionmaker communicates their choice in favour or against; the communication of this decision inherently expresses preference and therefore a decision can be considered a value frame. The act of deciding is naturally a value judgement, imbuing one choice over another with value to someone in recognition of an intended outcome as a condition or state preferable to another, thus expressing a choice preference and imbuing it with value, or valorising. This value is communicated via frames giving the decision character in context. Decisions as the outcome of a causal interpretation, evaluation, and treatment recommendation in response to a problem definition mirror Entman's (1993) frames definition. In this way, a communicated decision can be considered as a decision frame, and decision communication inherently an act of framing.

Important insights would be to systematically identify not only the former mechanism of influence, but also this latter sequencing as evidence of relational influence. A third important insight would be to show which frames affect which values and decision outcomes. From this we could communicate more broadly that for certain values indicators detected in a discussion, using a type of frame and discussion content in a type of context would lead increased/improved or reduced/detrimental outcomes for sustainability impacts. Equally important is knowing when in discussions choice space is present and most potent/effective for long-term impact. The significance of such insights would rest in the multipartite presentation of process, content, mechanism, pathway, and outcome. For it would represent a crucial step in first, contextualising and second, generalising evidence for the effects of values and frames together in choice spaces and their decision outcomes. The next section introduces the trials in that quest.

1.7. Influence Mapping Trials

Having identified the mechanism of influence, this forced us to next ask: how to conceptualise and represent choice space and pathways of influence? In response, we first considered how pathways might be conceptualised: as courses, routes, connected sequences, or lines of travel. The concept of sequences, previously introduced, provides an analytically useful characterisation of variables in a process. We then considered two Levels of Analysis (LOA) to examine pathways of influence: throughout an entire project, and between variables. We examined both naturally-occurring and logical sequences of influences.

With pathways-through-projects LOA, we initially mapped the complete, natural sequence across a whole project in two levels of detail as sketch process diagrams, showing different stakeholders contributing to the problem framing and decision-making pathway. This was based on the natural pathways communicated by one architect, so when we looked at another architect, we saw different pathways and initially struggled to see anything other than serial patterns of ($information\_framing \rightarrow decision$), making only assumptions about values' roles . Indeed, natural sequences were both protracted and messy, particularly because we lacked a method to identify how variables were related in context. It was therefore difficult to detect and provide evidence for influence via natural pathways initially. An additional difficulty was that not all architects provided complete variables for all clients they discussed in pilot interviews.

To understand natural project-pathways LOA, we examined logical sequences of influences between variables, recalling what we previously saw. If we could extract F, V, DM variables and sequence them in various logical orders, we could then evaluate which sequence most accurately reflected the realities communicated through the natural language interview. We needed systematic evidence of influence pathways between variables; because without establishing relationships between variables, the logical project-pathways could be invalid. Accordingly, we considered that the project-level LOA could only be examined properly once variable pathways were determined; so on this we focus next. Rich descriptions provided by some architects provided the necessary evidence to examine both LOAs in one architect-client-project.

To identify pathways of influence between variables, we first selected two variables: (V, F). This also demanded that (F) has at least two sub-categories: architect's problem frame (PF_{ar}) on which the client decides, and client's decision frame (DF_{cl}). We then considered how their pathways might be represented, or mapped to show pathways of influence. Whilst several trials at influence mapping were conducted, steps in the most successful trials are shown in Table 28. First, we needed to identify where temporally where we might see not only spaces to establish meaningfulness, but also influence loci, and for natural themes of response timings (Step #1). Step #2 established that possibilities for establishing meaningful choice were greatest at the beginning of architect-client interactions, which diminished over time. It also identified that challenges had altered the decision-making landscape, reflected in architect-client decisions how to address challenges. Step #3 utilised, a) the previous raw inputs of values and b) Step #1 timing-phases as categories to begin populating values tables with instantiation timings to help understand contexts with timings. Two map versions located interesting findings.

Table 28 Successful Influence Mapping Trial Steps

#	Trial Step	Mapping Outcomes
1	Stages/Phases 1 – Natural categories/themes for timings See §1.8	Key Stages identified as: A. INITIAL DESIGN PROBLEM/BRIEF (DPr/DBr) B. INTERIM DM/CONCEPT/PROBLEM-SOLUTION (DMi) C. INTERIM DM/CHALLENGES (DM-CC) D. FINAL DM (DMf)
2	Stages/Phases 2 – when most important//influential//impactful See §1.9	A. Shows Early; initial concept B. Shows Tender; before construction C. Shows When challenged
3	Timing of Values instantiations by client/project ($Values + Timing$) See §1.10	A. Shows Client values, contextually instantiated by phase, took on various character with closer examination. B. Some values were present earlier, some later; what happened to them? Missing clarity on variations in values manifesting over time. C. Missing the frames which may have influenced and de/activated the values prioritised in context.

4	AR+CL Frames interrelationships See §1.11	A. Shows Jointly Negotiated Frames B. Missing Values, Timings C. Do client's frames activate/deactivate their values ($Far \rightarrow Vcl$)? D. Or do architect's frames activate/deactivate the client's values which motivated their communication/decision frames ($Far \rightarrow Vcl \rightarrow Fcl$).
5	AR+CL ($Values + Frames$) relationships See §0	A. Shows Frames are activating and deactivating multiple values due to contextual priming from communication frames. B. Different instantiations of the same value theme can be seen at separate times in response to frames for both architect and client. C. Missing complete timings. D. Missing Decision/Outcomes.
6	$Frames + Values + Timing$ See §1.13	A. Shows above with complete timings. B. Missing Decision/Outcomes.
7	$V + F + DM + Timing = Context + Effects$ See §1.13	A. Shows multiple values are activating and deactivating due to contextual priming from communication frames. B. Different instantiations of the same value theme can be seen at separate times in response to frames for both architect and client. C. Shows complete timings. D. Shows Decision/Outcomes.

We identified that the broader, project-level 'discussion' between architect and client takes place over time and is comprised of multiple linked discussions. Consequently, we henceforth considered the project-level 'discussion' as one Case, and each of the multiple linked discussions as one Unit of Analysis. With closer examination, we noticed that client values were contextually instantiated by phase and took on various character in response to the contextual framing. Rather than being different values, manifesting at separate times, some values were contextually-responsive instantiations of a broader, umbrella value, activating and deactivating due to contextual priming by communication frames. These points play out in the two final steps and are addressed accordingly in the next section. To unfurl the two final keys to successfully map influence pathways, trial steps #4 and #5 are discussed in the next section.

In hindsight, if the question about conceptualising and representing choice space and pathways of influence had been posed earlier, we might have chosen a different route to generating and analysing data. The 'blanket' exploratory approach to interview questioning fortunately provided sufficiently rich evidence to answer these and other previous questions that allowed us to focus our quest as follows.

1.8. Timing 1: Stages/Phases 1: Natural Timings

To capture where temporally where we might see not only spaces to establish meaningfulness, but also influence loci, we looked for natural categories or themes for timings (i.e., project stage). They should relate to the gain and loss of meaningful choice. By examining when values of both participants and stakeholders were instantiated, we could see that timing was naturally categorised into four general phases:

1. BRIEF/INITIAL DESIGN PROBLEM; or early interactions concerning briefing and establishing the client's needs
2. PRELIM DM/CONCEPT; or concept design and planning consent, then
3. INTERIM DM/TENDER; or design development phases
4. FINAL DM/CONSTRUCTION; or decisions on final progress

BRIEF/INITIAL DESIGN PROBLEM encompassed early interactions concerning briefing and establishing the client's needs. PRELIM DM/CONCEPT incorporated concept design

and planning consent. INTERIM DM/TENDER corresponded to design development phases or working drawings stages. FINAL DM/CONSTRUCTION was when decisions on final progress were made, which sometimes led to a building, other times project cancellation.

1.9. Timing 2: Stages/Phases 2: When most influential

1.9.1. Early

These phases would make sense to industry familiars, but we also noticed some subtle but important variations to the briefing or initial design problem phase. Some participants identified differences between the design problem clients brought to them, and the brief which together they agreed to advance. AR03-HHK and AR03-AKDEV. Further, two participants, AR08 & AR10, explicitly identified a preliminary phase prior to early briefing in which they begin to form impressions of stakeholders and clients. Once being alerted to its existence, similar situations were identifiable in all participants but one. AR07 freely identified that they engage with clients to found out values-based information in the earliest moments of meeting an individual for the first time.

This reinforces the view that the possibilities for establishing meaningful choice were greatest at the beginning of AR+CL interactions, which diminished over time. As AR03 said, "If it's not there in the first place, it's not going to happen…" AR03 raised an interesting point that he prefers not to "bother engaging 'hard-nosed developers' with sustainability, as they normally [[dictate]] what levels they wish to attain". Looking again at remaining responses, we began to see how other ARs also formed opinions of their counterparts even before the brief was established.

1.9.2. Challenges

Additionally, during the INTERIM DM phase, the challenges AR08 identified had altered the decision-making landscape. Most previously instantiated values seem to have been suppressed; the architect was able to identify what was most valued to the client at that time, reflected in their decision on how to address the challenge. It was then considered how participants handled and framed sustainability issues, and how values of both architect and client contributed to the Final DM outcomes. What was not entirely clear from the first mappings was the priority of values in each cluster by phase.

1.10. Timing 3: Values + Timing

The phases shown in were used as categories to begin populating values tables with instantiation timings to help understand contexts with timings. We began with the clients of AR03, as he provided the richest, most detailed descriptions of client interactions.

Table 29 AR08-VCL1v1

Initial mapping of Client values statements (VCL) by project phase - STEP 1					
	PROJECT PHASE →	BRIEF	PRELIM DM / PLANNING	INTERIM DM / TENDER	FINAL DM
AR08-VCL1v1	CLIENT VALUES STATEMENT ↓				
V-CL Initially Instantiated	Beneficial Use	X	X	X	X
	Legacy; Concern for future generations	X	X		
	Sustainability	X	X		
V-CL Later Instantiated	Practical, Family Values		X		
	Spending / Costs			X	
	Efficiency, Cost			X	
	Statutory Compliance (Viability / Threat of Loss)			X	X

Initially, the simple timings shown in Table 29, AR08-VCL1v1 were helpful only because their simplicity caused us to examine the interview texts more closely for instantiated values and frames. It was only then we noticed that client values, contextually instantiated by phase, took on various character with closer examination. Further, what we thought in v2 were instantiations at tender could be further characterised as two separate

'challenges' during a temporally extended tender period. This also reminded us that 'the discussion' between architect and client takes place over time and is comprised of multiple linked discussions. Table 30, AR08-VCL1v2 shows the various values instantiations by project phase. Particularly interesting is the formatting which drove the questions shown in italics: Where have the other values gone? Suppressed, or inactive? Changed? Like Beneficial Use at the start, later shifting to Financial Benefit/Gain.

Table 30 AR08-VCL1v2

Initial mapping of Client values statements (VCL) by project phase - STEP 2, shows instantiating and shifting values by phase						
	PROJECT PHASE →	BRIEF	PRELIM DM	INTERIM DM		FINAL DM
AR08-VCL1v2	CLIENT VALUES STATEMENT ↓			CHALLENGE 1	CHALLENGE 2	
V-CL Initially Instantiated	Beneficial Use	Beneficial Use (Next generation Family benefit)	Best Beneficial Use (As a family asset)	Beneficial Use, Cost perspective (GAIN/LOSS)	Beneficial Use, Loss / Gain (Viability / Threat of Loss)	Financial Benefit / Gain (Beneficial Use for Gaining Additional Rent)
	Legacy; Concern for future generations (Mine, Ours, Others)	Legacy; Concern for future generations (Mine, Ours, Others)	Legacy; Concern for future generations (Mine, Ours, Others)			*Where have the other values gone? Suppressed, or inactive? Changed? Like Beneficial Use to Financial Gain. Was FG underlying? Driving? Masked? Not fully formed? Was BU an instantiation of FB/G in the context? ↑*
	Sustainability	Sustainability (as a long-standing Family Farm Owner)	Sustainability (Associated with putting building into Beneficial Use)			
V-CL Later Instantiated	Practical, Family Values (As farm owner; Ours, Mine)		Practical, Family Values (As farm owner; Ours, Mine)			
	Spending / Costs (Ours, Mine / Practical Budgeting)			Spending / Costs (Ours, Mine / Practical Budgeting)		
	Efficiency, Cost (from a COST perspective)			Efficiency, Cost (from a COST perspective)		
	Statutory Compliance (Viability / Threat of Loss)				Statutory Compliance (Viability / Threat of Loss)	Statutory Compliance (Viability / Threat of Loss)

This drove the question: was Beneficial Use an initial instantiation of Financial Benefit/Gain in the context? Was Financial Benefit/Gain underlying? Driving? Masked, suppressed? Not fully formed? Favoured preliminary explanations are either underlying and driving, or suppressed because the client wished to portray a more favourable set of value priorities initially. But what precipitated these variations? Without more context this remained unanswerable, for even v3 is missing the frames which may have activated and influenced the values prioritised in context.

1.11. Timing 4: AR+CL Frames interrelationships

To get from instantiation and timings to influences, we mapped several scenarios of how influence might manifest. We trialled two methods of including frames. First as both AR and CL contributions to a joint frame, with values influencing, in one row. Accordingly, AR08-VCL1v3, Table 31-

Table 32 shows by phase vertically: the architect's values (V_{AR}), the joint frames in temporal context (F_{CL}+F_{AR}), together with client values (V_{CL}) by stages and forms they were instantiated, including the client's resulting decisions/frames.

Table 31 AR08-VCL1v3 First two phases (arrows indicate reading direction)

AR08-VCL1v4	PROJECT STAGE / TEMPORAL PHASE >>>	BRIEF / INITIAL DESIGN PROBLEM	PRELIM DM / PROBLEM-SOLUTION
	ARCHITECT VALUES STATEMENTS >>>	Winning and Keeping The Job Helpfulness and Teamwork Well-Liked; Pleasant to Work With Pushing for Sustainability	Efficiency Pushing for Sustainability Concern for Future Generations
	FRAMES >>> (AGREED FRAMES; CLIENT'S DECISIONS)	*FCL "simply wants to put this building back into beneficial use for the next generation"*	*FAR1: '... we could get all sorts of [high efficiency measures] on that'* *FAR2: 'Code 5 (high) Sustainability agenda; ... for the next generation'*
TIMING	CLIENT VALUES STATEMENTS ↓	VCL-DBr	VCL-DMi
V-CL Initially Instantiated		Beneficial Use (Next generation Family benefit) Legacy; Concern for future generations (Mine, Ours, Others) Sustainability (as a long-standing Family Farm Owner)	Best Beneficial Use (As a family asset) Legacy; Concern for future generations (Mine, Ours, Others) Sustainability (Associated with putting building into Beneficial Use)
V-CL Later Instantiated			Practical, Family Values (As farm owner; Ours, Mine)

Table 32 AR08-VCL1v3 Last three phases

AR08-VCL1v4	INTERIM-DM / CRITICAL CHALLENGE 1	INTERIM-DM / CRITICAL CHALLENGE 2	FINAL DM
	Fulfilling Professional Obligations (Statutory Compliance) Cost Efficiency Keeping The Job (Getting Paid Commensurately)	Balancing Statutory And Client Needs Questioning / Debating Unhelpfulness (Helpfulness / Risk Management) Strategising Appropriate Responses (Helpfulness) (Risk Management) Keeping The Job (Getting Paid Commensurately)	
	FAR3: 'Current options are ambitious; Costs are more than Building Regs require'	*FAR4/FLA: 'Local Authority Objections to countryside PV visibility / reflections'*	*FCL: 'Do we really need all these things'* *'Why do it unless we can gain some additional rent'* *'Why spend the money; I don't really want it anyway'* *'We'll do / spend what's needed to [comply with regs]'*
TIMING	VCL-CC1	VCL-CC2	VCL-DMf
V-CL Initially Instantiated	Beneficial Use, Cost perspective (GAIN/LOSS)	Beneficial Use, Loss / Gain /Viability / Threat of Loss)	Financial benefit / Gain (Beneficial Use for Gaining Additional Rent)
V-CL Later Instantiated	Spending / Costs (Ours, Mine / Practical Budgeting) Efficiency, Cost (from a COST perspective)	Statutory Compliance (Viability / Threat of Loss)	Statutory Compliance (Viability / Threat of Loss)

To know the sequence of relations between $V \leftrightarrow^{?} F \leftrightarrow^{?} DM$, we trialled mapping a logical sequence of influence pathways based on the findings from Hey et al. (2007) in which both parties come together to agree a common frame comprised of contributions from each, or

$$(V_{AR} \rightarrow [F_{AR} + F_{CL}]_{com} \leftarrow V_{CL}).$$

The tabular map representing this structure is shown in Table 31-

Table 32. This v3 provides a snapshot of each key phase vertically as a discrete discussion with inputs (V+F), ~~actions~~ (VCL present by phase), and outputs (V+F), representing one Unit-of-Analysis. By linking vertical phases in horizontal sequence, they together provide an overview of the complete project 'discussion' including outcomes as client's final preference choice, recorded as decisions enacted on site. However, it still does not yet account for the epistemological anomaly identified in §1 about objectively sharing 'joint' frames. To support its proof, the relations evident in the influence mechanism identified in §1.6 were also re-examined in §4. Proof would consist in one of the logical sequence maps matching the influence mechanism and the natural language evidence. The mapped result would also allow us to conduct comparative analysis of a speaker's values and their frames to detect similarities as further proof, thus examined below.

1.12. Timing 5: AR+CL Frames relationships with values

The initial simplicity of values lists and tabular maps §2.1-2.2 shielded this richness thus visible on further exploration of mapping frames relationships with values. It suggested two things. First, that multiple values are activating and deactivating due to contextual priming from frames of communication. Second, that different instantiations of the same value can be seen at different times in response to both architect and client frames. This raised an important question about whether the client's frames activated/deactivated their values ($F_{CL} \rightarrow V_{CL}$) or if the architect's frames activated/deactivated the client's values ($F_{CL} \rightarrow V_{AR}$), which motivated their *decision-communication* frames ($F_{AR} \rightarrow V_{CL} \rightarrow F_{CL}$). Taking this question and method forward, below this pattern of values and frames is analysed more closely to evaluate the presence of influences and represents a valid reflection of the architect's experiences in patterns also representative of other example cases.

In Table 31, Column-1 shows the timings of values instantiation (Initially or Later); Column-2 the client values statements in the priority architects conveyed; Column-3 the conjoining sequence of actions at the briefing stage as ($V_{ar} \rightarrow F_{com}^{DBr} \leftarrow V_{cl}$) which leads to; Column-4 conjoining action sequence at preliminary decision-making/concept design as ($V_{ar} \rightarrow F_{com}^{DMi} \leftarrow V_{cl}$). In Col-3 and Col-4, values are shown in their instantiated and contextualised clusters; in the architect's case, V_{ar}: Pushing for Sustainability moves from third to first priority and V_{ar}: Concern for Future Generations appears when he detects that the client is also concerned for future generations and interested in sustainability. So too is the frame calibrated according to what each other hears, both in terms of frames and values they hear being communicated in those frames. This would explain how, within the frames $(F_{com})^{DMi}$ at Interim Decision-Making stage (Col-4, Prelim-DM/Problem-Solution), content can be detected that reflects or is related to values detected at earlier Design Briefing stage, $V_{cl,ar}^{DBr}$.

Importantly this suggests a natural order of influence ($V_{ar} \rightarrow F_{ar,com}$), ($V_{cl} \rightarrow F_{cl,com}$) that is plausible, necessary, and sufficient, and therefore likely to be true. An ($F_{speaker} \rightarrow V_{speaker}$) sequencing *does not adequately explain the effect of one's own values on one's frames*. It is more likely and logical that, frames are formulated with reference to one's values. It is also reasonable to conclude that a speaker's frames influence a listener's frames *via values* which act as filters, or $F_{ar} \rightarrow (V_{cl} \rightarrow F_{cl})$, and by extension $(V_{ar} \rightarrow F_{ar}) \rightarrow (V_{cl} \rightarrow F_{cl})$ explicitly identified by one participant and implicitly expressed by many more who were astute at stakeholder engagement. This is supported by both the results and their maps. However, it appears to contradict how two parties come together to agree common frames, deducted from existing literature on design team framing (Hey *et al.*, 2007; Hey, 2008). Previous results reported by Hey et al. (2007) suggest that an influence sequence could be rearranged:

$$SEQ - H\text{: } (V_{ar} \rightarrow [F_{ar} \leftrightarrow F_{cl}] \leftarrow V_{cl})$$

to show a commonly-negotiated frame comprised of contributions from both parties.

Table 33 AR08-VCL1v3 Last three phases

AR08-VCL1v4	INTERIM-DM / CRITICAL CHALLENGE 1	INTERIM-DM / CRITICAL CHALLENGE 2	FINAL DM
	Fulfilling Professional Obligations (Statutory Compliance)	Balancing Statutory And Client Needs	
	Cost Efficiency	Questioning / Debating Unhelpfulness (Helpfulness / Risk Management)	
	Keeping The Job (Getting Paid Commensurately)	Strategising Appropriate Responses (Helpfulness) (Risk Management)	
		Keeping The Job (Getting Paid Commensurately)	
	FAR3: 'Current options are ambitious; Costs are more than Building Regs require'	***FAR4/FLA: 'Local Authority Objections to countryside PV visibility / reflections'***	***FCL: 'Do we really need all these things' 'Why do it unless we can gain some additional rent' 'Why spend the money; I don't really want it anyway' 'We'll do / spend what's needed to [comply with regs]'***
TIMING	**VCL-CC1**	**VCL-CC2**	**VCL-DMf**
V-CL Initially Instantiated	Beneficial Use, Cost perspective (GAIN/LOSS)	Beneficial Use, Loss / Gain (Viability / Threat of Loss)	Financial benefit / Gain (Beneficial Use for Gaining Additional Rent)
V-CL Later Instantiated	Spending / Costs (Ours, Mine / Practical Budgeting)		
	Efficiency, Cost (from a COST perspective)	Statutory Compliance (Viability / Threat of Loss)	Statutory Compliance (Viability / Threat of Loss)

Earlier, jointly-negotiated frames recalibrate later when at Critical Challenge 1, Col-2 Table 33, when AR08 says $[F_{ar3}^{CC1}]$: 'Current options are ambitious; Costs more than the Building Regs require' and $[F_{ar3}^{CC2}]$: 'Local Authority objects to countryside PV visibility/reflections' (Col-3). These are perceived by the client as compatible with (V_{cl}^{CC1}): Beneficial Use (Cost Perspective, Gain/Loss); Watching Spending/Costs; and Energy Efficiency (from a cost perspective) (Col-2); and later (V_{cl}^{CC2}): 'Statutory Compliance (Viability/Threat of Loss)' (Col-3); who then says in Column-4 $[F_{cl3}^{DMf}]$: 'Do we really need all these things?' 'Why do it unless we can gain some additional rent', etc. (Col-4). The mechanism explaining this phenomenon is a relationship of influence whereby CL senses, detects, recognises, or interprets something in $[F_{ar}]$ that affects them; this affect happens when something AR says, $[F_{ar}]$, resonates, warms, tempts, charms, activates, or otherwise influences their values, which causes a reaction, evident in CL's subsequent frames. This mechanism or effect explains how frames activate or suppress values. It also helps explain how AR values priorities are reordered to suit the circumstance. Earlier values were still present in the cluster, but in a different priority, and some suppressed in context.

However, this also importantly shows not only that $F_{AR} \rightarrow (V_{CL} \rightarrow F_{CL})$ as suggested above, but also that $F_{CL} \rightarrow (V_{AR} \rightarrow F_{AR})$; what the client says affects the architect's frames via values as mediators or filters. The same influence mechanism explains this phenomenon for both parties. Focusing into the action mechanism in equation form,

$$For\ Client: \quad [F_{ar}] \rightarrow \left[\left[\underbrace{CL(Senses/Recognises/Interprets)}_{A} \rightarrow \underbrace{V_{cl}(Resonates/Activates)}_{B}\right] \rightarrow DF_{cl}\right]\ldots$$

$$For\ Architect: [F_{CL}] \rightarrow \left[\left[\underbrace{AR(Senses/Recognises/Interprets)}_{A} \rightarrow \underbrace{V_{AR}(Resonates/Activates)}_{B}\right] \rightarrow F_{AR}\right]\ldots$$

The client senses/recognises/interprets $[F_{ar}]$, which then resonates, warms, tempts, charms, activates, or otherwise influences (V_{cl}). This demonstrates that $A[CL(Senses/Recognises/Interprets)]$ something $B[value-resonating]$ in $[F_{ar}]$ because their decision response is values-laden and reveals the values with which they make that decision in that context. The client's reasoning mechanism for their framed decision in this case is 'necessity' in relation to (contextual) values priorities— 'gaining some additional rent' via not losing opportunity for beneficial use. [A] is self-evident based on the effects seen in each $[DF_{cl}]$ and $[F_{ar}]$, so in every circumstance [A] can therefore be

dropped from the equation. It can be concluded that the simplified pattern shown in SEQ2 below

$$SEQ2\text{: } (V_{ar} \rightarrow F_{ar}) \rightarrow (V_{cl} \rightarrow F_{cl})$$

is the only explanation that is plausible and logical and likely for the evidence present in $[DF_{cl}]$ and $[F_{ar}]$. This logical sequence matches both the influence mechanism (V→F) and the natural language evidence.

Notwithstanding, the prevailing natural language patterns in Table 31-Table 33 show that the values with which the architect framed design decision problems and critical challenges client ultimately decided against sustainability were qualitatively different than those on which they initially decided. This is entirely plausible and not illogical: new information is presented in a way—i.e. framed—that alters the decision-making landscape, and this is supported by existing research on framing effects in decision-making. The architect framed challenges in ways the client perceived as affecting their more strongly-held or core decision-making values, then decided congruently. This reaction when challenged signifies the client's moment of inflection. Had the architect chosen to reframe sustainability-related information in ways that affect or speak more strongly and effectively to core client values associated with longer-term impacts, the client may have chosen otherwise. So too does architect's framing of challenges signify their moments of inflection as opportunities to embed longer-term meaningfulness.

1.13. Timing 6-7: V+F+DM=Context

One problem with the previous version (AR08-VCL1v3) was that it showed client values *after* frames of both architect and client ($V_{ar} \rightarrow F_{cl}$) in Col-3 and client ($V_{ar} \rightarrow F_{ar}$) in Col-4. This implies that an instantiated, contextualised cluster of values results from the decision-problems, challenges, and decisions others frame, implying essentially undifferentiated sequence effects, which seems implausible. This also would suggest that the order of analysis—analysing V_{CL} from F_{CL}—would match the natural order of influence, $F_{CL} \rightarrow V_{CL}$. But this seems both illogical and implausible: a client says something that *later* affects their values, but with some unknown effect. Yet it was possible to detect values in frames; therefore, axiomatically the values were present either before or during the formulation and framing of one's speech. It was previously shown that values were detected in frames; therefore $V_{CL} \rightarrow F_{CL}$ is plausible, necessary, sufficient and logical and therefore most likely to be true. To evidence, the $F_{CL} \rightarrow V_{CL}$ sequencing does not adequately explain how the architect's assertion affects the client. It only shows that $[F_{AR}+F_{CL}] \rightarrow (V_{CL})$; it does not adequately explain the effect of one's own values on the frames one communicates. It is therefore more likely and logical that the architect's communication frames influence the client's communication frames via the client's values which act as filters, or $[F_{AR}] \rightarrow ((V_{CL}) \rightarrow [F_{CL}])$, and by extension $(V_{AR} \rightarrow F_{AR}) \rightarrow (V_{CL} \rightarrow F_{CL})$. This second sequence is mapped in Table 34 AR08-VCL1v4. This would explain how when AR08 says $[F_{AR}]$… it is interpreted by CL as compatible with (V_{CL})…, who then says $[F_{CL}]$….

To avoid a contradiction, it was necessary to detect whether the values coded from frames were valid codes and indeed those values employed by a client. But determining this is not only not possible in the current study, and more importantly, it is also not necessary—because the architects only acted based on the clients' values which they interpreted, an important distinction for this research. The architect only formulates their frames based on what they interpreted was most worthwhile, meaningful and significant to the client—not what may have actually been valued by the client in their own minds and inadequately expressed, or the value inadequately formed and conceptualised for the clients (and other stakeholders by extension). Hence, this finding also allows the client to be mistaken about their values and the logic and truth value of the previous finding to remain intact. The mapped and natural language evidence clearly supports these conclusions.

Returning to the analysis matrices, it then became straightforward to extract and populate several of these maps for participants who provided sufficient evidence of the required variables, $(V_{AR} \rightarrow F_{AR}) \rightarrow (V_{CL} \rightarrow F_{CL})$ in one unit-of-analysis, and two or three complete units-of-analysis to track any potential variations over time, e.g. see Table 34.

Table 34 AR08-VCL1v4

AR08-VCL1v4	PROJECT STAGE / TEMPORAL PHASE >>>	BRIEF / INITIAL DESIGN PROBLEM	PRELIM DM / PROBLEM-SOLUTION	INTERIM-DM / CRITICAL CHALLENGE 1	INTERIM-DM / CRITICAL CHALLENGE 2	FINAL DM
VAR	ARCHITECT VALUES STATEMENTS >>>	Winning and Keeping The Job	Efficiency	Fulfilling Professional Obligations (Statutory Compliance)	Balancing Statutory And Client Needs	
		Helpfulness and Teamwork	Pushing for Sustainability	Cost Efficiency	Questioning / Debating Unhelpfulness (Helpfulness / Risk Management)	
		Well-Liked; Pleasant to Work With	Concern for Future Generations	Keeping The Job (Getting Paid Commensurately)	Strategising Appropriate Responses (Helpfulness) (Risk Management)	
		Pushing for Sustainability			Keeping The Job (Getting Paid Commensurately)	
FAR	ARCHITECTS FRAMES >>>	???	*FAR1: '... we could get all sorts of [high efficiency measures] on that'* *FAR2: 'Code 5 (high) Sustainability agenda; ... for the next generation'*	*FAR3: 'Current options are ambitious; Costs are more than Building Regs require'*	*FAR4/FLA: 'Local Authority Objections to countryside PV visibility / reflections'*	???
TIMING	CLIENT VALUES STATEMENTS ↓	VCL-DBr	VCL-DMi	VCL-CC1	VCL-CC2	VCL-DMf
VCL Initially Instantiated	Beneficial Use	Beneficial Use (Next generation Family benefit)	Best Beneficial Use (As a family asset)	Beneficial Use, Cost perspective (GAIN/LOSS)	Beneficial Use, Loss / Gain (Viability / Threat of Loss)	Financial benefit / Gain (Beneficial Use for Gaining Additional Rent)
	Legacy; Concern for future generations (Mine, Ours, Others)	Legacy; Concern for future generations (Mine, Ours, Others)				
	Sustainability	Sustainability (as a long-standing Family Farm Owner)	Sustainability (Associated with putting building into Beneficial Use)			
VCL Later Instantiated	Practical, Family Values (As farm owner; Ours, Mine)		Practical, Family Values (As farm owner; Ours, Mine)			
	Spending / Costs (Ours, Mine / Practical Budgeting)			Spending / Costs (Ours, Mine / Practical Budgeting)		
	Efficiency, Cost (from a COST perspective)			Efficiency, Cost (from a COST perspective)		
	Statutory Compliance (Viability / Threat of Loss)				Statutory Compliance (Viability / Threat of Loss)	Statutory Compliance (Viability / Threat of Loss)
FCL	CLIENTS FRAMES >>>	*FCL: "simply wants to put this building back into beneficial use for the next generation"*	???	???	???	*FCL: 'Do we really need all these things'* *'Why do it unless we can gain some additional rent'* *'Why spend the money; I don't really want it anyway'* *'We'll do / spend what's needed to [comply with regs]'*

This shows V_{AR} → F_{AR} → V_{CL} → F_{CL}^{DM}. It also implies that (V_{CL} →) F_{CL} → V_{AR} → F_{AR}. What the Client says affects the architect's frames via values—and so too for architect to client. The mechanism explaining this phenomenon would be a relationship of influence in which AR recognises or senses or interprets something in F_{CL} that affects them; this affect happens when something CL frames (i.e., F_{CL}) resonates, warms, tempts, charms, activates, or otherwise influences. This is diagrammatically outlined below.

F_{CL} → AR recognises, senses, interprets F_{CL} → F_{CL} resonates, warms, tempts, charms, activates, or otherwise influences V_{AR}

F_{CL} → AR Senses/Recognises → V_{AR} resonated/activated → F_{AR}

Framed Statement → Listen → Sense/Recognise → Affect → Formulate → Framed Response

When asked why stakeholders were engaged, very few of the responses were unrelated directly to the human values of the architect. Indeed, it is likely that the architect's own values are responsible for guiding/driving them to set up and conduct the engagement process in ways that are compatible or congruent with their values and valued goals.

1.14. Reflection

Mapping different approaches to the timing of both sustainability frames and instantiations of values provided an important window into contextualisation and thereby variables' interrelations thanks to the very rich detail provided by three participants. They facilitated the noticing and detection of how client values, contextually instantiated by phase, took on various character that subtly shifted through a project lifespan. This led to concluding four key things.

First, that multiple values are activated and deactivated due to contextual priming from architect/speaker's frames. Second, that *different 'instantiations' of the same 'value theme'* can be seen at separate times, manifesting in response to both architect and client frames. Third, that frames of communication are analytically distinct from frames of thought, but it is with the former that listeners—both clients and architects—perceive and respond. Fourth, that the spaces to establish meaningfulness align with influence loci where frames of sustainability and human values interact. With this it was then possible to move forward to the final mapping part (§4) to examine the impacts of values and frames interactions on client choice-space and decision-making. These conclusions establish the influence process and identify 'locations' where the individual meaningfulness of sustainability may be gained and lost, but not the effects or outcomes of contextual framing and values instantiations.

Important questions were also raised. It would be helpful to architects to know more about how improvements to project sustainability might utilise such findings—what room for improvement is available, how more space might be made and enriched, and when along a project chronology this might be facilitated, from start to finish. It would therefore be worthwhile to know how to show the dynamics of values and frames interactions and effects over time.

Values can act positively or negatively on sustainability preferences, sometimes counterintuitively, such as AR03 public objectors' 'Sense of Responsibility'. Most ARs seem to overlook where some of the potentially richest spaces are, considering briefing as merely establishing a potential project and the client's need. Very first interaction is when first impressions are formed and values first manifest. V_{CL} then later used to inform

whether SD is raised, and how framed. Frame of the discussion as context or umbrella frame sets the tone for SD. A wider-scoped 'discussion frame' is different from narrower-scoped 'individual communication frames' used e.g. by AR to characterise and thereby elicit a decision, and by CL to express SD interest/disinterest. Many data nuggets show ARs from these groups are already framing to and/or with values, using language they prefer or consider will have a certain effect, albeit predominantly unknowingly of the underlying principles shown in SEQ2. Similarly, they do not explicitly recognise which shifts in language or frames represent important shifts in values landscapes.

The decision-making process can be conceptualised as an ongoing, temporally extended discussion with AR as conductor but made up of multiple, linked micro-discussions in which micro-decisions were implicitly, explicitly, and summatively evolving towards project completions. This temporal extension is significant because it creates opportunity to revisit previous choices/decisions with new information, but may create both possibility and problem. Sustainability can be established early, but also has been found to be later subject to challenge and change, reduction, or elimination.

We set out to explore and then develop a way to systematically identify and describe where the values of architect-participants and the stakeholders they engage are involved in these interpersonal interactions and currently influence any final outcomes toward sustainability. Sustainability is axiomatically concerned with long-term impacts, therefore considerations in favour or against sustainability naturally imply long- or short-term thinking, respectively.

Surprisingly, all these G1-G2 AR's bar one wanted to be building (more) sustainably, but point to financial constraints and structural barriers tied up in complexities and difficulties of development process. Interestingly, they typically implicitly suggest some awareness and application of values and frames interactions, but further work is needed to unpack these relationships. Improved recognition of values and frames, and their deployment, as both information and instruments in a process might facilitate improvements. It was previously suggested that human values can be conceptualised as inputs in an overarching decision process. But we have seen how, rather than a simple input like a computer instruction, human values are better conceptualised as mediators in an overarching decision communication process in which communication frames are inputs and clients/stakeholders are actor-agents. The entire process of meaning and context co-construction (including omissions and emphases) is conceptualised as the broad discussion frame within an overarching communication-/decision process. The next section takes up the remaining gaps to examine influence mapping over time in detail.

Establishing room for sustainability improvements through detailed influence mapping over time

Gaps identified in reflection on the preliminary influence mapping suggested it would be helpful for research and practice know: how to find and later create more opportunities for individually-meaningful choice; where values of stakeholders currently influence any final decisions regarding sustainability; and what are the natural pathways of values influences in architect-stakeholder discussions. Because design and construction are already well-conceptualised as a linked, multi-stage process (RIBA, 2013), this lent itself naturally to structuring and discretising key phases and focal points for meaningful choice in messy discussions. Based on literature and on the empirical findings in ES2 and above, to [1] locate spaces where meaningful choices are made or missed, the next plausible and logical steps would be to establish: [2] how sustainability was framed and architect/stakeholder values involved, [3] the relationship of values to frames, [4] the effects of framing and [5] key junctures of values influence. This allowed the identification

of [3.1] what values influence and [3.2] frames influence look like. These were established in the above mapping (S3). From this it was identified [1] what meaningful choices looked like in practice and which are the most impactful based change to sustainability outcomes (increase/decrease). But important connections were missing to sufficiently explain the variations in values and frames effects over time—usefully conceptualised as *influence pathways* in typical discussions. To better understand such pathways, several methods were trialled for mapping relationships between contexts, timings, frames, and values.

1.15. AR+CL Discussions, over time

To communicate sequences of interlocutor's discussions looking for values influence pathways, the question of variations over time was considered to better contextualise the data. This began by mapping out ways to better see how the contexts, timings, frames, and values were inter/related with their effects over time. This was necessary to understand the relationship of values and frames in choice-space provision and meaningful decision-making in isolated discussions and their variations over several discussions in a project, therefore more representative of real-world project decision-making. Their identification would also demonstrate interrelationships and how relations of influence are present over time. These could be more useful to both researchers and architects.

Looking at more complete sequences of frames in discussions allowed us to see isolated frames in a broader discussion context. Here, sequences of statements showed more of the discussion context that architects communicated about each discussion. A truncated snapshot of a typical discussion, Table 35, shows how project discussions are frequently initiated by the architect in response to their client's request or to communicate project issues. Architects then seek agreement and resolution by eliciting preferences, choices, or decisions. Each of these three indications of agreement can be equated to a decision, based on the nature of architect-client relationships in which the primary purpose is to agree a building design to construct[9]. Normally these architects identified/raised an issue, proposed a solution, and elicited a decision, frequently helping clients by explaining options and their potential perceived results, identified variously as implications/impacts/consequences.

Table 35 Framing discussion at Prelim Decision-making/Problem-Solution without values (reading direction by row)

	COLUMN-1	*COLUMN-2*	*COLUMN-3*	*COLUMN-4*
PROJECT PHASE ↓	**SPEAKER →**	**PROPOSER ↓**	**RESPONDER ↓**	**DECISION FRAME ↓**
PRELIM DM / PROBLEM-SOLUTION →	**INDIVIDUAL FRAMES (F_{ar}) (F_{cl}) →** and context in each discussion	*[FAR Ø]: '((Hello, how can we help?))'*	[FCL1a]: "[I would like to put in] a planning application in for a single house which is largely converted from an existing brick built farm building from the 1880's" [FCL1b]: "it's her farm, and she's an individual who's got a very long family history of owning the land, and simply wants to put this building back into beneficial use for the next generation […]; she won't sell; it will remain part of the estate."	***'Planning Application to put brick farm building back into beneficial use for the next generation of family'***
	INDIVIDUAL FRAMES (F_{ar}) (F_{cl}) → and context in each discussion	[FAR1]: "[...] we could get all sorts of solar panels on that, it's big enough to have a GSHP in the garden area because it's basically backing on to fields, we can have wood-chip boilers, we can have underfloor heating, we've got reasonably big windows without being overly big, … and we will have a lot of insulation and upgrading of the fabric."	[FCL2]: "the client seemed quite keen on all that.."	***'… we could get all sorts of [high efficiency measures] on that'*** ***"Code 5 (high, Code for Sustainable Homes) Sustainability agenda; … for the next generation'***
INTERIM-DM / CRITICAL CHALLENGE →	**INDIVIDUAL FRAMES (F_{ar}) (F_{cl}) →** and context in each discussion	[FCL3]: "…until she had a Quantity Surveyor / Estimator QS do a budget"	[FAR2]: "...came up with a good set of options for her to think about… trying to get to Code 5, which is probably a bit ambitious, but let's give it a go."	***'Proceed with Code level 5 options'***
	INDIVIDUAL FRAMES (F_{ar}) (F_{cl}) → and context in each discussion	[FAR3/QS]: 'Current options are ambitious; Costs are more than Building Regs require'	[FCL4]: And she said "well oh, yes, well, all these things are all very nice, and we can probably put a wood chip boiler in, because I can give you a storage building next door to put it in, and store the wood chips and so on... but I don't really *need* all this."	***'Cut options to save money'***

This shows how decision frames (Col-4) were comprised of sequential contributions from both client and architect (Cols 2-3). An issue is proposed (Col-2), interlocutors discuss,

[9] It is noted that these considerations are likely to but may not hold beyond project decision-making contexts.

and an agreement for action—a framed decision—is made by the client as principal decision-maker (Col-3). In those discussions, such interaction sequences can be abstracted very basically as [AR propose/inform]-[CL reaction/response]-[AR action/reaction]. In these re/actions, information is communicated to which the listener is responding. In both architect and client frames were found not just raw information, but frame components—Problem Definition, Causal Interpretation, Moral Evaluation, Treatment Recommendation. There, frame components individually and together have the capacity for values activation. However, in the current rendering, identifying which component de-/re-/activates values was not possible without knowing more about which values were present in each discussion. Yet in individual statements/snapshots, we could see 'values-framing'—or frames communicating values. For instance, [FCL1b], Table 35, was coded (V_{CL}) of Beneficial Use (As a family asset); Legacy, Concern for Future Generations (Mine, Ours) and Family Values; and Sustainability (as a long-standing Family Farm Owner).

In architect's problem-solving, evidence was found of not simply reaction but *practitioner reflection* [FAR1-2]; from this discussion stream it was unclear whether it is/was pre-, during, or post-discussion. Given architects evidence of frequently extensive, rich descriptions, the latter was discounted because it was clear from the interview which were *post-factum* reflections. Identifying architect's reflection via framing is important because it signals that by active reflection, architects can choose how to conduct architect-client problem framing and form more compatible frames for improved decision-making. More importantly, both active and *post-factum* reflection pose opportunity to reflect on client's statements, assess for values, and respond—i.e., reframe accordingly. To demonstrate these connections conclusively, it was necessary to know the values present analytically. From this it can be concluded that examining sequences of contextualised frames helps to discretise discussions and frame components, and isolating and sequencing values and frames together is necessary to show influence pathways. With a 'values lens', framing across multiple discussions over time may unlock influence pathways which were obscured by situational complexity and simpler tabulated analyses. Therefore, mapping frames with values follows below.

1.16. AR+CL Discussions with a values lens

By examining frames with a values lens it became straightforward to identify isolated, individual frames that communicate values. Here, more context to architect-client discussions was examined by combining sequences of frames with discussion context and the values that architects communicated were active in each discussion. This truncated snapshot of a typical discussion, Table 36 shows the values present (V_{CL1}, V_{AR1})whilst speaking [FC_{L1}, F_{AR1}]. Whilst these 'frames' show the complete statements or context to a frame, they were also abstracted into frame components (as Chapters 2 and 3). However, when examining statements for frame components, we noted a variation to our prior characterisation of frame theory, as follows.

Table 36 AR08+CL03 discussion snapshot with active Values

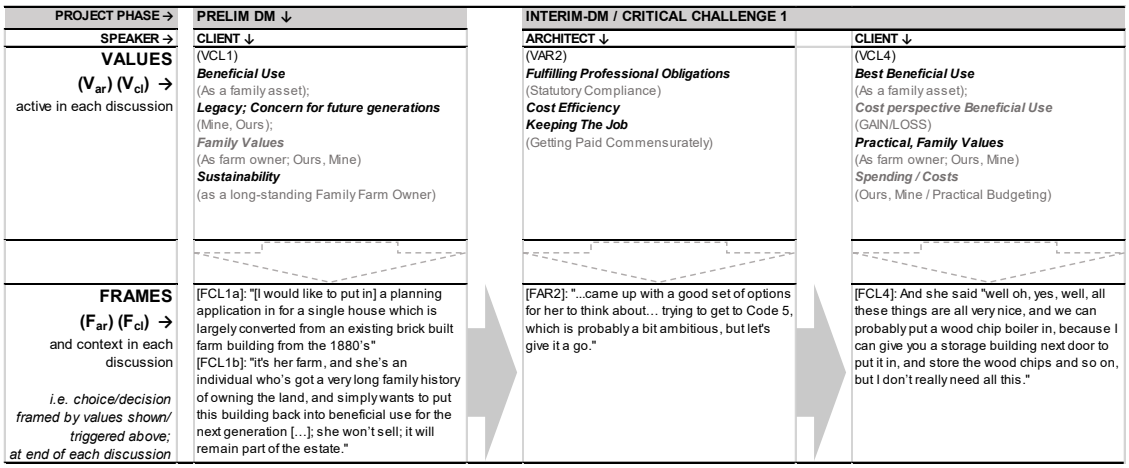
SPEAKER →	CLIENT ↓	ARCHITECT ↓
VALUES (V_{ar}) (V_{cl}) → active in each discussion	(VCL1) ***Beneficial Use*** (As a family asset); ***Legacy; Concern for future generations*** (Mine, Ours); ***Sustainability*** (as a long-standing Family Farm Owner)	(VAR1) ***Efficiency;*** ***Pushing for Sustainability;*** ***Concern for Future Generations***
INDIVIDUAL FRAMES (F_{ar}) (F_{cl}) → and context in each discussion *i.e. choice/decision framed by values shown/triggered*	[FCL1a]: "[I would like to put in] a planning application in for a single house which is largely converted from an existing brick built farm building from the 1880's" [FCL1b]: "it's her farm, and she's an individual who's got a very long family history of owning the land, and simply wants to put this building back into beneficial use for the next generation […]; she won't sell; it will remain part of the estate."	[FAR1]: "[...] we could get all sorts of solar panels on that, it's big enough to have a GSHP in the garden area because it's basically backing on to fields, we can have wood-chip boilers, we can have underfloor heating, we've got reasonably big windows without being overly big, … and we will have a lot of insulation and upgrading of the fabric."

It was previously considered that frames contained evaluative components (Entman, 1993) which could express the speaker's values. But in [FAR1] it was found that, by speaking enthusiastically of multiple forms of 'energy efficiency' measures without directly communicating his evaluation, the architect was indirectly or implicitly expressing his own values (VAR1) through his emphasis and phraseology, and likely his timing. This suggests that what matters between two speakers in a decision context is not the presence of all four frame components (Entman, 1993), but what listeners interpret that then forms the basis of their response-action.

This initial mapping was expanded into a sequence in Table 37 showing the discussion exchange between architect and client in two key phases, Preliminary Decision-Making and Interim Decision-Making / Critical Challenge 1. Here, we saw that the client's early frames [FCL1] about beneficial use for future generations activated previously dormant architect's values (VAR1) 'Concern for Future Generations', preceded by 'Promoting Sustainability', and 'Efficiency' in priority. This also shows how the architect's enthusiastic framing of multiple energy efficiency measures [FAR1] triggered a shift in client's values (VCL2-3) to *Best* Beneficial Use and *Practical* Family Values (shifts italicised) that precipitated their budget request [FCL2]. When the client's request was framed as 'Budget' [FCL3], this activates the architect's (VAR2) Cost Efficiency, and Keeping the Job, which then drove his framing of 'good options' with 'probably a bit ambitious…' [FAR2]. The client's later frame [FCL4], expresses 'need' in relation to or framed by their values (VCL4), of Beneficial Use, Practicalities, and Cost/Spending.

Table 37 AR+CL discussion with Values and Frames in two key phases

PROJECT PHASE →	PRELIM DM ↓		
SPEAKER →	CLIENT ↓	ARCHITECT ↓	CLIENT ↓
VALUES (V_{ar}) (V_{cl}) → active in each discussion	(VCL1) ***Beneficial Use*** (As a family asset); ***Legacy; Concern for future generations*** (Mine, Ours); ***Family Values*** (As farm owner; Ours, Mine) ***Sustainability*** (as a long-standing Family Farm Owner)	(VAR1) ***Efficiency;*** ***Pushing for Sustainability;*** ***Concern for Future Generations***	(VCL2-3) ***Best Beneficial Use*** (As a family asset); ***Legacy; Concern for future generations*** (Mine, Ours); ***Sustainability*** (as a long-standing Family Farm Owner) (Associated with putting building into Beneficial Use) ***Practical, Family Values*** (As farm owner; Ours, Mine)
FRAMES (F_{ar}) (F_{cl}) → and context in each discussion *i.e. choice/decision framed by values shown/ triggered above; at end of each discussion*	[FCL1a]: "[I would like to put in] a planning application in for a single house which is largely converted from an existing brick built farm building from the 1880's" [FCL1b]: "it's her farm, and she's an individual who's got a very long family history of owning the land, and simply wants to put this building back into beneficial use for the next generation […]; she won't sell; it will remain part of the estate."	[FAR1]: "[...] we could get all sorts of solar panels on that, it's big enough to have a GSHP in the garden area because it's basically backing on to fields, we can have wood-chip boilers, we can have underfloor heating, we've got reasonably big windows without being overly big, … and we will have a lot of insulation and upgrading of the fabric."	[FCL2]: "the client seemed quite keen on all that.." [FCL3]: "…until she had a Quantity Surveyor / Estimator QS do a budget"



The mechanism explaining the depicted relationship sequences is one of influence, confirming the findings of the preliminary influence mapping (§3) and prior approaches (§2). This demonstrates that values influence, 1) how people frame sustainability issues, and 2) how they hear and interpret sustainability frames in the context of project decision-making, via values activation. Frames communicate one's values and communicate to other's values when seen with enough discussion context to show an evaluative component. It shows how frames of 'high energy efficiency' appeal to the listener with' Family Legacy' and 'Sustainability'-orientated values, but are moderated by their 'Cost'-orientated values associated with personal gain from the 'beneficial use' of a disused outbuilding. It suggests this moderation is driven by their pragmatic or practical-orientated values. This architect, with 'Sustainability'- and 'Concern for Future Generations' or 'Family'-orientated values, contextually responded well to this client with similar values. When similar values were recognised, the architect responded appropriately. Where differences in values or challenges to the project were detected by the architect, such as when the client flipped or reneged on their previous decision in favour of sustainability, the architect responded with disdain or disapproval. It suggests that this response was based on an interpretation of incompatibility with values . This also suggests that architects implicitly value retaining and progressing projects, itself potentially driven by practice-related values, such as commercial or design orientation (e.g., AR08 and AR07 respectively), and staying afloat by at least one account (AR03).

It also demonstrates the *pathway* of an individual's values influences on their frames: one's values impact and influence the frames one uses to communicate—in sequence over time. Speaker's frames then impact and influence listeners by activating or deactivating their values by communicating information meaningfully in varying degrees, thus encouraging or facilitating value's activity or dormancy. From this it can be concluded that frames communicate one's values through problem treatment and emphasis, made clear by an evaluative component, but also implied via phraseology and emphasis.

In summary, by discretising and focusing on the values and frames coded from single statements in a discussion sequence, we have built up a picture of the interactions between values and frames in project decision-making, conceptualised as a single but ongoing project-long discussion. This sequencing demonstrates the pathways of values influence through the frames used in discussions. First, values influence the formulation of a speaker's frames. Then, by communicating information variously meaningful to listeners (including a speaker's values), their frames influence a listener by communicating to their values. Taken together, this suggests that project decision-making can be conceptualised as a communication process replete with opportunity for values-based discussion, and potentially more individually-meaningful choice.

But what these depictions have not shown was twofold. First, what the precise outcomes from sequences of values and frames look like, only simple sequences of

$$(VALUES_n \rightarrow FRAMES_n);\ \ (VALUES_n \rightarrow FRAMES_n)$$

Second, how the values seen shifting are related MORE PRECISELY to each other and the context, and then what effects such changes precipitate. Therefore, next we map sequences of $VALUES_n \rightarrow FRAMES_n \rightarrow OUTCOMES\ldots\ over\ time$.

1.17. Summary of key steps in the final Influence Pathway Mapping

Because we wanted to know more precisely the effects of both values and frames as influences, the numerous trials of influence mapping conducted in the preliminary influence mapping were re-examined. To systematically identify pathways of influence between variables throughout a discussion which affect meaningful choice, it was necessary to first take stock of the previous steps. Then, this indicated what should come next. Steps in the final, most successful trials are shown in the PDF Map Annexe, §7 and summarised below.

To locate where temporally not only spaces to establish meaningfulness, but also influence loci might be found, it was necessary to identify natural themes of response timings (Timing-1, §3.3). Timing-2 (§3.4) revealed that possibilities for establishing meaningful choice were greatest at the beginning of architect-client interactions, which diminished over time. It also identified that challenges had altered the decision-making landscape, reflected in architect-client decisions how to address challenges. Timing-3 (§3.5) utilised, a) the previous raw inputs of values and b) Timing-1 timing-phases as categories to begin populating values tables with instantiation timings to help understand contexts with timings. Two preliminary map versions confirmed previous findings. Timing-4 was detailed above in §3.6 and §1.15 and Timing-5 in §3.7 and §3.1. As the most important Timing 6-7 (§3.9) are summarised below.

Of the two principal variables (V), $[F]$, both showed two sub-categories; for $[F]$, architect's problem frame $[PF_{ar}]$ on which the client decides, and client's decision frame (DF_{cl}). For (V), architect's values (V_{ar}) , and client's values (V_{cl}). It was then considered how their pathways might be represented or mapped across an entire project to show complete pathways of influence. Next, the variables were sequenced according to above findings. If frames convey meaning imbued in raw information, and values are what is most meaningful to individuals; then, simply, Values = Meaning, and Frames convey Meaning. Thus confirming SEQ2a,

$$SEQ2a\text{: } [FRAMES_{speaker}] \rightarrow (Values_{listener}) \rightarrow [Frames_{listener}].$$

and together with the architect and client values and frames interactions in one unit-of-analysis can be mapped as SEQ2b,

$$\text{SEQ2b: } \llbracket (V_{Speaker}) \rightarrow [F_{Speaker}] \rrbracket \rightarrow \llbracket (V_{Decisionmaker}) \rightarrow [F_{Decisionmakerp}] \rrbracket \ \downarrow \cdots$$

Next, alternative explanations for this sequence are examined below.

1.18. EQ1 alternative explanations

As identified above, Table 34 implies SEQ2a: 'messages' the speakers communicate, i.e., via frames, affects the listeners' frames via their values, for both problem frames and decision frames. The same influence mechanism explains this phenomenon. The equation form zoomed into the mechanism,

$$\text{SEQ2c: } \underbrace{PF_{AR}}_{A} \rightarrow \left[\left[\underbrace{CL\{Senses/Recognises/Interprets\}}_{B} \rightarrow \underbrace{V_{CL}\{Resonates/Activates\}}_{C} \right] \rightarrow \underbrace{DF_{CL}}_{D} \right]$$

Similarly, it was reasoned in §1.12 that

$$SEQ2\text{: } (V_{ar} \rightarrow F_{ar}) \rightarrow (V_{cl} \rightarrow F_{cl})$$

The proof and argument for this are discussed below, along with an examination of alternative explanations in Appendix-6.2.

Because it was also necessary to know whether B and C are better explained by an alternative explanation, and therefore something else other than values mediates a clients' framed decisions, an evidence is examined and argument made about architect's understanding of the client's act of not choosing otherwise. There may be priorities that are not values-derived, but the very nature of procuring a building at its core is driven by values-derived priorities. A client assigns to their perceived need a relative standing/status/position in an order of importance, whereby the level of importance and order are evaluated against criteria of most to least worth, meaning, import, significance, the classic definition of a human value. A client chooses to spend money on a new home, office, warehouse, school versus saving money for another purpose (e.g., retirement; giving raises to staff; purchasing more stock; more teachers, books or computers, etc.). In this way, clients value the outcomes from a building procurement higher than the money saved by not building.

Even if decisions were not value-laden, as [[B→C]→D] above, but clients were alternatively motivated, driven, controlled, or coerced by some other force or construct other than values, such as beliefs, attitudes, or simply their emotions, say [E]→[D], the fact that they chose one possible outcome over another is an act of valorisation—the act or process of ascribing value to the chosen/preferred outcome, whether guided by their values through free will or driven by emotion/belief/attitude. The decision is itself an act of valorisation, proving the presence of [C], but not the mechanism [A→ [[B→C]→D]]. It may be that $\overbrace{PF_{AR}}^{A}$ causes some emotional reaction which drives $\overbrace{DF_{CL}}^{D}$. But the data and the maps suggest that a reaction, emotional or otherwise, would be caused by an interpretation or recognition of something in AR's problem frame PF_{ar} that links to CL's more deeply held values in which the act of linking (e.g., [C] resonating/activating) to values causes a reaction [C] after [B]. So too with attitudes and beliefs, which can be considered are consequents of values. For this reason, [B→C] is plausible, necessary, and logical. Because [A]→ [C→D] plausible, necessary, logical and sufficient for the purposes of this research *because* it is what matters to interpersonal framing and decision-making (i.e. individuals frame their frames based on the information they interpret for individuals and contexts), [B] can be eliminated from the sequence.

Furthermore, regarding [B], the acquisition of 'information' communication from problem frame PF_{ar}, to which CL responds with [D] a decision frame DF_{cl}, demands that there is a sense mediator [B] prior to [C]. This is self-evident. For, axiomatically the PF_{ar} information must somehow be acquired by clients for them to respond with a decision—clients are reacting with a decision to PF_{ar} which must by definition have been acquired by the senses. The decision-inducing information in PF_{ar} did not self-materialise in client's brains. The sense mediator [B] is not only self-evident without further proof or argument but also consistent in every instantiation. Based on this and the previous argument, [B] will therefore in future be dropped from the equation, for the active variable is values—V_{CL} *and* V_{AR}—and because the same underpinning influence mechanisms in SEQ2 apply to both parties, as a unit-of-analysis SEQ2a can be sequenced over time as a refined sequence for values influence pathways via frames:

$$\text{RSEQ3: (V)} \rightsquigarrow \text{VIA\_[FR]} = \langle(\text{V}_{\text{AR}}) \rightarrow [\text{F}_{\text{AR}}]\rangle \Rightarrow \langle(\text{V}_{\text{CL}}) \rightarrow [\text{F}_{\text{CL}}]\rangle \cdots$$

It is in the client's framed design problems, choices, and decisions that architects perceive the clients' values and values priorities in relation to one another. It is therefore with this interpersonal information that architects then frame their next move.

In one final layer of detail in prose English terms:

$$Frame/Message \rightarrow Listen \rightarrow Perceive/Sense/Recognise \rightarrow \\ \rightarrow Values\ Affected/Resonated/Activated \rightarrow Formulate \\ \rightarrow Speak/Frame$$

When the Frame/Message is spoken or detected, the listener Perceives/Senses/Recognises something meaningful and their Values are Affected/Resonated/Activated, which then precipitates the listener to Formulate their thoughts and then Speak/Frame.

Thus, by rigorously and critically examining, detailing, and developing focused then interconnected sequences and maps of AR+CL discussions of both frames and values, the final map presented §7 shows a complete sequence from project inception to final agreed sustainability measures, read left-to-right by column. Each column represents one discussion by project phase as unit-of-analysis, in which architect's values (V_{AR}) influence their frames communicated to clients [F_{AR}], which in turn de/activate client values (V_{CL}) that finally influence their framed choices or decisions [F_{CL}], which the architect considers as an instruction to act and so the RSEQ3 sequence repeats in serial. Each columnar sequence represents a Unit-of-Analysis. Linked sequences, shown by dashed arrows linking [F_{CL}] to (V_{AR}), terminate in final framed decisions e.g. [F_{CL9}], comprised of linked contributions from multiple parties but focused on architect and client.

MA3 Integration and reflection

Sustainability is, by definition, naturally concerned with long-term impacts; therefore, considerations in favour or against sustainability imply long- or short-term thinking, respectively, whether intentional or consequential. The aim was to explore where the values of stakeholders involved in decision-orientated interpersonal interactions currently influence any final outcomes toward sustainability. The purpose was to identify room for improvement by detecting natural pathways of values influences in typical discussions, and to suggest points at which they could be enriched and space could be provided for more meaningful considerations regarding long-term impacts associated with sustainability.

Of the possible ways to understand meaningful choice, it was shown how conceptualising multi-party decision-making as a communication process and studying it with a values and frames lens unlocked framing as both an important locus and mechanism where opportunities for meaningful choice are made and spent. By studying decision/choice-focused interactions between architects and stakeholders, it was successfully determined how to locate values and frames in discussions. The values of stakeholders involved currently influence final outcomes toward sustainability through discussions with the architect. But as shown in study-part ES3a because many stakeholder's inputs are prescriptive, they delimit space for meaningful choice beyond statutory compliance. Therefore, the only space remaining for improvements was the interaction between client and architect, a view resolutely supported by architect's evidence.

Interactions with stakeholders were relevant inputs in architect-client framing and decision-making interactions through discussions affecting sustainability, which are co-constructed by contributions from both parties. Through their discussions, many architects were already seeking and employing values information when framing sustainability for decision-making. By understanding clients values and communicating to them, some architects instinctively recognise chances to speak to values and encourage meaningful choice; but the variables and mechanism of influence remain unrecognised explicitly. In those discussions, the acts of 'framing' communicate meaning in ways that

may be varyingly compatible with the listeners values. For if human values represent what is most worthwhile, important, and meaningful in the conduct of one's affairs, then one framed characterisation may motivate or de-motivate listeners to choose/act more than other. For it is well established that human values are important precursors to motivation and decision-making behaviour (Cheng and Fleischmann, 2010). Thus, the way sustainability-related issues are framed, and the human values involved are clearly critical factors in identifying and maximising opportunities for improving sustainability decisions by providing more space for client's individually-meaningful choice through identifying values, considering solutions that reflect or respond to those values, and recalibrating frames—reframe—choice options accordingly.

Because when viewed with a values lens, many challenges faced by architects either involved or implied human values which are more accessible with a values lens on frames/framing (see ES3a). These findings establish the mechanism of influence from a values and frames perspective, the influences' effects (i.e. frames effects on decisions via values), as well as the effects of communication/framing on decision-making via values.

More specifically, by studying values and frames as discussion content, they were established as raw inputs into a larger communication process. More importantly, in client's decision-making, one architect specifically said that everything is filtered through values as mediators—a clear signal that client values are key to establishing meaningful choice. Then establishing and communicating with client values is key to maintain and protect decisions concerning sustainability. More importantly, on reflection many of the frames used to communicate sustainability bore some resemblance to the values of speakers and listeners. Wanting to know more about their interrelationships, comparing mere lists of values and basic frames was inconclusive without context. Furthermore, despite frequent shows of goodwill initially, only rare clients retain their goodwill when challenged. None of the decontextualised—or 'raw'—values lists provided evidence of these phenomena, so we wanted to know more. The interview data was examined for whether the framing of an issue influenced the choices made. Refocusing on architects' framed issue evaluations/treatments and audiences began to show some interesting variations. Speaker's treating an issue positively or negatively indicates whether it may also be valued. Yet because these findings demanded more to systematically establish their interrelationships, relations of influence and their sequence were identified. By serially mapping influence sequences across multiple discussions, influence pathways of values via problem and decision frames were mapped.

The maps showed the pathway of an individual's values influences on their frames: one's values impact and influence the frames one uses to communicate. Changing the individual's sequence from $VALUES_n \rightarrow FRAMES_n$ to $FRAMES_n \rightarrow VALUES_n$ only produces nonsense: a speaker formulates their frames based on some unknown precursor, whose discernment then affects their values with some unknown effect. However, given the evidence, it is unlikely that another construct, such as attitudes or beliefs, motivates frame formulation. The evidenced 'precursors' conform to classic definitions of values, whereby they endure across multiple discussions in time and represent what is most worthwhile, meaningful, and important to individuals in guiding their conduct. Values are more significant and impactful, enduring and foundational than attitudes (e.g. disliking clutter, versus the judgement that an uncluttered life is worthwhile and meaningful) and more stable, enduring, and concrete than beliefs (e.g. a belief that clutter is unhealthy, versus the judgement that decluttering is a worthwhile and significant endeavour). Thus, some explanations for this sequence and effect neglect these points and fail to sufficiently explain how the content of speaker's value-rich or value-activating frames then appears in both speaker's problem frames and listener's response-frames. Only $V \rightarrow F$ sequenced as $V \rightarrow F \rightarrow V \rightarrow F$ sufficiently explain this finding. Conjointly, speaker's frames then impact and influence listeners by activating or deactivating their values by communicating information meaningfully in varying degrees, thus encouraging or facilitating value's

activity or dormancy, $F \rightarrow V(\rightarrow F)$. Alternative explanations for this sequence and effect fail to sufficiently explain how the "message warms within them (AR10)", 'speaks to them subjectively '(AR10), 'gets them to think it's their good idea' (AR08), or are 'used as filters for their decision-making' (AR07). Taken together this also suggests that values can be considered as a core, foundational, and more enduring component of attitudes which are more malleable and fleeting.

More broadly, all architects said they wanted to be building more sustainably, but point to issues including financial constraints, unwillingness, or structural barriers linked to complexities and challenges of development processes. To fundamental reasons can be contended: the lack of values and frames recognition, and their under-application as both information and instruments in interpersonal interactions requiring subjective contextualisation. It was previously suggested that human values can be conceptualised as inputs in an overarching decision process. But it was then shown how, rather than a simple inputs like computer instructions, human values are better conceptualised as mediators in an overarching decision-communication process in which communication frames are stimuli and stakeholders are actor-agents. The entire process of meaning and context co-construction (including omissions and emphases) is seen as the broader-scoped 'discussion frame' within an overarching decision-communication process or project decision landscape. Thus, when seen as establishing and maintaining meaningfulness, the architect-stakeholder communication process is replete with opportunity, which architects inherently practice but rarely recognise explicitly. Taken together, these points remain under-researched.

Thus an important outcome was to systematically identify not only a mechanism of influence as $(V \leftrightarrow F)$, but also the sequencing:

$$(V_{Speaker}) \rightarrow [F_{Speaker}] \rightarrow (V_{Decisionmaker}) \rightarrow [F_{Decisionmaker}]$$

as evidence of relational influence. A third important insight was to identify that frames affect values and decision outcomes. From this may be possible in further research to determine when, for certain values 'indicators' detected in a discussion, using certain types of frame and discussion content in certain contexts would lead improved or reduced/detrimental outcomes for sustainability impacts. This is examined systematically in study SS1. Equally important is knowing when in discussions choice space is present and most potent/effective for long-term impact. Diagrammatic evidence was shown of framing to values as a potential mechanism to enhance meaning; establishing meaningfulness through framing to values initially can set the stage, but patterns of how that meaningfulness is maintained through and beyond challenge are currently unclear, thus examined in SS1.

The significance of these insights rest in the multipartite presentation of process, content, mechanism, pathway, and outcome. For the current quest, it represents a crucial step in first, contextualising, and second, generalising evidence for the effects of values and frames together in choice spaces and their decision outcomes. Importantly, values' influences in decision-making relate to opportunities for architects to create more space for clients' meaningful choices by newly conceptualising decision-making as a communication process involving the framing of options, the relative success of which relies on recognising and accessing the decision-maker's values. If values represent what is most worthwhile, significant, and meaningful in conducting one's affairs, then meaningful choices are most likely to be those aligned or compatible with values. For decision-makers, this would mean making values-based choices are most likely to be the most meaningful choices. This helps preliminarily define meaningful choice as values-based decision-making. Thus, a set of indicators that help identify patterns of core values and the frames that might help align sustainability goals with those values will be one practical contribution of subsequent research. The learning communicated herein was

taken forward first into structured studies of how values influence pathways via frames affect the formation, shift, and change of decisions (ES3c), then into systematic studies of a wider range of discussions (SS1-SS2).

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Appendix 5 Systematic Studies' Appendices

Contents

Appendix 5.1 MA4 Developments in Framing Experience Process Mapping Method

Contents

Tables and figures

MA4 Introduction

The purpose of this appendix on mapping study MA4 was to include a fully-detailed exposition of the refined mapping method. The purpose of MA4 was to employ the previously established mapping method to map values influence pathways via frames to interim then final decisions, developing the techniques if necessary, to account for previous findings and any missing elements. The mapping methods from MA3 were adopted and refined with one graphical development and one important analytical development. Graphical representation of client values clusters was developed to show priorities of interpreted values clusters contextually-recalibrating with coloured lines showing movement patterns (Figure 32). The map analysis method was developed with new analytical overlays to show pattern analyses. These are briefly summarised below.

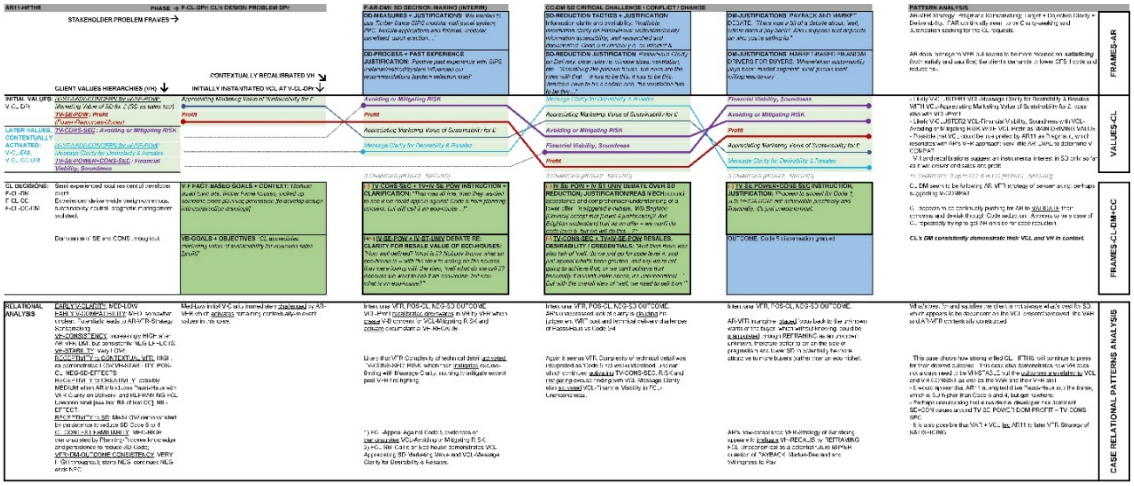

Figure 32 Sample refined map (AR11-CLH8) (for description of colour-coding, see Chapter 5)

To map any variations in values clusters responding to frames in context, MA4 developed the graphical representation showing the values clusters always remaining listed by priority top-to-bottom, with shifts and changes in values priorities as variation of lines connecting earlier with later values, and content shifts by their text descriptions. The presence and ordering/prioritising of multiple values instantiations signified a collection of values in a 'hierarchy': higher-priority values at the top, lower-priority values at bottom.

To systematically analyse the maps, analytical 'overlays' were added to the right-most column to show cross-case pattern analyses by participants' frames (top), then clients' interpreted values (middle), then clients' decision-frames (bottom). Overlays added to the bottom-most row show relational analyses by framing discussion as unit-of-analysis. Typical cross-case pattern analyses were added in the bottom-left, and broad cross-case relational pattern analyses at bottom right, incorporating an overview analysis of the entire case.

Founding and establishing framing processes and variables

1.1. Analytically establishing variables

To reliably replicate and establish relationships and patterns initially identified in the first 6 cases, all analysis instruments were adopted, with refinements and developments necessary in framing process analysis and mapping to account for complete projects, rather than influences principally during initial phases and later critical challenges. In brief, a multi-step process to analyse and map the problem framing and decision-making

process for 20 new cases involved: interview coding; analysis matrix development; initial pattern analysis; iterative mapping trials; pattern analysis checking; final analysis and mapping method with forward/reverse relational analysis and logic assessments. The values basis of decision-making was, in summary, established through: frames content analysis for values; pattern analysis/matching for checking against participant observations; then relational analysis to establish impact/influence.

Accordingly, key informant interview transcripts were analysed and coded for values and frames of problems and decisions as constructs derived deductively from the research questions, objectives, and literature. Transcripts were thematically analysed according to the procedure outlined by Braun & Clarke (2006) and open coded not only for frames and values, but also any baseline informant information and possible relations, effects, and relevant typologies. Frames were thematically coded according to the procedure outlined by Matthes & Kohring (2008). Transcripts were examined and coded for clusters of sustainability-related terms using indicators of the key framing components of 'frame elements' (various aspects of the sustainable design problem recounted by practitioners), 'reasoning devices' (e.g. drivers, influences, boundaries, barriers, etc.), and 'contextual frame packages (e.g. backgrounds, settings and contexts) (op.cit.). Values were thematically coded (as Braun and Clarke, 2006) in terms of values themes and indicator statements (e.g. Burford, Hoover, Dahl, & Harder, 2015; Harder, et al., 2014). A client decision is understood as a choice, indication of agreement, preference, opinion, position (e.g. positivity, neutrality, negativity), conclusion reached, or action taken as communicated by clients to architects (cf. LR1). It is sometimes indicated by a request, or even a lack of disagreement. In Study 4/CG2, two refinements were included from values theory. Higher order values categories were included from the Refined/Revised Schwartz Value Theory (Schwartz, et al., 2012)to uniformly link with architect's values data and provide recognised analyses which relate to existing literature. As noted in Study 3, some values concepts appeared to be valued either instrumentally, as means to an end, or terminally, as ends in themselves (Rokeach, 1973). These terminal or instrumental values were analysed alongside the values notations previously mentioned. The frames and values were then (thematically) conceptually mapped graphically first as tabulated graphs and then maps to identify key components and draw out relations and effects, later used in subsequent phases to analyse frame effects. Details of the framing process analysis and mapping methods are described in the following sections.

1.2. Founding framing processes and variables

In prior Study 3, the framing process was initially identified and outlined through a three-part analysis process. A principal analytical backbone of Thematic Analysis (TA) (Braun & Clarke, 2006) was adopted that employed two thematic-analytical sub-techniques found in related research to analyse (framing) experiences and influences: Thematic Experience Pattern Analysis and Mapping (Aronson, 1994; Rekola, Mäkeläinen, & Häkkinen, 2012) and Relational Analysis and Mapping (Carley, 1993; Carley & Palmquist, 1992). The former was used to analyse and map the framing process as a pattern of experiences in which practitioners come together with key decision-makers to discuss and agree the design problem. The latter was used to disentangle the relations at key junctures, specifically looking for the relation of influence with a values lens based on indicators previously operationalised. Embedded in the TA backbone were applied grounded techniques of memoing, constant comparison, and theoretical sampling, which were adopted from an early stage because of early exposure.

This provided an initial mapping of framing processes for multiple stakeholders. It contributed a preliminary map of how architects' values influence their development and conduct of framing processes. The process included their detection, elicitation, or interpreting stakeholder values in the construction of their frames. By deconstructing the framing and decision-making process through experience pattern analysis, Study 3

identified a significant juncture where initial sustainability gains were lost either because of value-framing to more strongly-held values.

Using relational analysis of architects' frames and client values, it was shown through relational operators how framing critical challenges to clients activated and deactivated critical and surface client values, respectively, for losses to sustainability established earlier. Study 3/CG1 contributed the first of six case analyses of how practitioner and client values initially influenced architect's problem framing and later how problem frames influenced client values to influence their decision-making evidenced in their decision frames. To fully establish and extend a robust, reliable, tested, and verified theory of influence throughout the design and construction process, connecting initial process constitution and framing with later critical challenges, data was generated and analysed on 20 new cases.

1.3. Establishing framing processes longitudinally

To establish framing processes in detail longitudinally required knowledge of three variables at four key phases or points in projects, elicited through interviews, as above. The relevance and significance of each were established in Study 3/CG1 using a preliminary form of Framing Process Maps. They formed the basis of the maps employed in Study 4/CG2, methods for which are described in §0. The first of four key phases was an initial, two-part phase with the preliminary Design Problem (DPr) a client brings to an architect. The second as the initial Design Brief (DBr) where an architect establishes the project requirements. The third captured Initial Decision-Making (DMi) interactions, normally occurring during concept and design development. This was followed by the fourth key phase of conversations on Critical Challenges (CC), identified in Study 3/CG1 as significant junctures when the decision-making landscape is recalibrated.

Study 4/CG2 interviews elicited three key variables during each phase of one project with one client: a set of problem frames; a set of client values perceived by the architect as relevant, pertaining to, or active during an interaction; and a set of client decision frames. The three variables were coded as F-AR-xx, V-CL-xx, and F-CL-xx; where xx indicates the phase in which they were instantiated. The four phases were coded as -DPr, -DBr, -DMi/-DM, and -CC. Each variable and phase are described next; afterwards, it is explained how they were established. First are the problem Frames of Architects (F-AR) or of other key decision-influencing actors introduced above, such as Contractors (F-CON) or Planning Officers (F-PO), which set decision problems for clients. Next are Values of Clients (V-CL) in the priority elicited in interview or analysed/coded from transcripts; below, this is explained further. The priority represents a client's Values Hierarchy (VH-CL) or values stack (as referred in previous reports). These are followed by Frames of Client's Decisions/outcomes (F-CL-DM). Each sequence of F-AR, V-CL, and F-CL-DM represents one Unit-of-Analysis.

Some architects were unaccustomed to splitting the client's design problem DPr from the design brief DBr, as they are sometimes considered part of the same interaction whereby architects determine client requirements. This distinction is significant because some architects were better than others at detecting initial clues and cues (e.g. values, goals, approaches, preferences, etc.) in the initial client design problem and 'replaying' them back to clients. This helped to, a) ensure architects understood, and sometimes b) incorporate those clues/cues into the development of design briefs. Briefs both include information architects need to progress the project and provide information to clients about project needs/requirements. The DPr/DBr distinction was made simply by asking architects about design problems their clients brought to them, then asking what architects did with the problem to develop it into a design brief. In this way, the difference is clearer. This distinction could also be made when listening and examining transcripts for the design problem architects thought they were developing, which sometimes was not

initially entirely clear to them. When the design problem changed, it was recorded as either a Client Decision Frame resulting from an interaction (F-CL-DM), or a Critical Challenge Frame arising in the process (F-PO-CC). Sometimes the design problem merely became clearer as the result of a decision or critical challenge. Future work will evaluate the data from a perspective of problem-solution co-evolution (Dorst & Cross, 2001) to examine the ways architects and clients co-design the problem through framing-reframing.

Like Values, Frames are always suffixed with an individual (V-AR, F-AR) because they are analytically weak//meaningless without the context of their speaker. By extension, frames are analytically stronger and thereby more meaningful suffixed with project-context in which they were instantiated, which provides a temporal (F-AR-DBr) and social (AR14-HMH3/F-AR-DBr) context (the social/temporal code signifies ARchitect 14, Client-project 3; Frames of the ARchitect at Design Brief). The physical context was considered immaterial in this equation because interactions are normally conducted by various means (e.g., meetings, site visits, phone, email, letter, etc.); establishing context was therefore considered unnecessarily granular with limited availability. Primarily because architects were reporting past events that happened over an extended timeframe, details of where an interaction happened were considered analytically less significant that what happened with whom, when in the project phase, and why.

1.4. Establishing process variables

Frames were established by asking architects how they approached and explained sustainability to their clients (F-AR). This provided the what, how and why. Asking about contextual V-CL and V-AR established the deeper why. The relationship between architects' problem frames and decision outcomes was determined by asking architects how they approached and explained sustainability to their clients (F-AR) and what clients decided because of what was said (F-CL-DM) at each of the three key project phases identified during CG1 Study 3. Client's Values (V-CL) were established via interview by asking architects what they thought were client's values during each phase, using the WeValue values elicitation methodology (Burford et al., 2015; Harder et al., 2014). When briefed about values terminology, participants were given the description of client values as what they thought clients considered most worthwhile, meaningful, and significant to themselves concerning the project at a certain point in time. Two examples of clarifications received were when AR's asked, 'do you mean their drivers', or 'oh, you mean their priorities'. Accordingly, to promote clarity and analysable responses, variations between the complete definition and simply the word 'values' were used at different points in interview. Ensuring the architects parlance was the same as research definitions required listening for values statements that fulfilled the definition. Clients Values were recorded and mapped in the priority given by participants; when they were not provided via direct questioning in interview, they were analysed and coded from transcripts using a form of thematic content analysis and checked via forward and reverse logic assessment, explained in §1.8. These two skills were developed through initial training from three separate sources plus practice before and during pilot study and subsequent interviews. Training was received from, a) Common Cause Foundation (one three-hour session plus studying their handbook and reports), b) Values and Sustainability Research Group (VSRG) (with two individuals separately over 6-7 sessions) who developed the WeValue values elicitation methodology, and c) literature reviews in both values and methodology. Some AR's knowingly elicited V-CLs simply by asking them their priorities, what they wanted from a project, and their goals. Sometimes clients would simply tell architects without prompt. Others said they get a sense of clients' values or what drives them, saying 'sometimes, you can just tell' [e.g. AR3; AR16]. From their clients' statements, AR's would derive client drivers which they employed as values data; its accuracy was approximated, which sometimes proved problematic, as discussed later. Equating priorities, goals, and drivers with client values simply captures the similar information using different terms.

The same approach and methods were used in eliciting, detecting, and coding frames; receiving training again from, a) Common Cause, b) a VSRG visiting researcher with experience in frames and framing, and c) literatures on frames, framing, and methodology.

Client values were captured specifically in relation to their decision-making. They were notionally considered as the clients' decision-making values because they were values that the architects considered as being involved in decision-making, not the values that clients themselves considered were involved. This is relevant because architects' perceptions of client values are believed to inform their framing, not the values themselves, which may only be completely knowable to the individual. Therefore, the findings are not about the values with which clients actually make decisions, but the values with which architects think are present and driving clients in their decision-making. Because it is with these values—client's values as perceived by architects—that they work, explicitly or implicitly. The focus is on architects, their perceptions of client values in context, the [framing] actions they take in response, the perceived effects on others in terms of client decisions, and outcomes of those decisions. It is therefore not about what clients say, but what architects "heard". This is not claiming to know precisely which client's values were involved with specific decisions at any moment in a project. It is about the relationships between architects' perceptions of clients' values, problem and communication frames constructed because of those perceptions, and their perceptions of the decisions made as a result. Most importantly, it is about the relationships between architects' frames, the perceived effects on client's values, and client's decisions as understood by architects, which then inform how they proceed. Because it was believed that architects act because of their perceptions of framing effects and consequent decisions. To determine relationships between the key variables F-AR, V-CL, and F-CL-DM, a multi-stage analytical procedure and mapping is described next.

Decision framing process analysis and mapping

1.5. Establishing initial sequences and relations

Based on analyses and evidence from Study 3/CG1, typical sequences were identified as the order in which a stakeholder's frames interact with a decision-maker's values to effect an outcome via decisions. The sequence identified from Study 3 which had the most effective, descriptive power (non-statistical) was simply that the architect's problem frames (F-AR) interact with a client's values (V-CL) with which they make decisions that are communicated through decision frames (F-CL-DM). A simplified equation is:

$$(1)\ \text{F-AR} \rightarrow \text{V-CL} \rightarrow \text{F-CL-DM}$$

where '►' refers to an interaction mechanism as a relation between preceding and following variables. Although the precise psycho-physical or neural processes involved are beyond the current scope, knowledge of the '►' mechanism (or relational operator) is relevant at the scale of defining the effect beyond generic 'interaction' or impact. Not only because it could provide, a) an indication of the relative success of the interaction, but also b) because it demonstrates a relation (i.e., F-AR ► V-CL, not F-AR ► F-CL) between two constructs that then impacts or results in a third, the client's frames of their decisions. Knowledge of the relation between problem frame and value and decision frame would be useful analytically in terms of relational parameters identified by Carley and Palmquist (1996): directional focus, magnitude, sign, and meaning. Because knowing 'which frames' have 'what relationships' to 'which values' would be useful to architects, if only so they know that when they recognise a certain value, using a certain problem frame—i.e. saying something in one way versus another—is likely to effect the decision outcomes in a certain way. In this research, directional focus is from either problem frame to value, or value to

decision frame. Magnitude is the strength of the relational effect. Sign is positive, negative, neutral, or nil. Meaning is the significance of the intended frame. The relation is expressed by a relational operator or series of operators. By mapping the relationships in columns as:

(2) Framed Problems → Activated Values → Framed Decisions

a relational pathway is inferred. To ensure this was the most representative and accurate formulation, alternative arrangements were examined. Three included:

(3a) AR Deliberation/Consideration → AR Activated Values → AR Framed Problems → CL Active Values → CL Framed Decisions

and

(3b) AR Framed Decisions → CL Deliberation/Consideration → CL Activated Values → CL Decisions/Responses Formulated → CL Framed Decisions

Yet, on closer examination, several pairs of these variables are better characterised as forming one, summative variable. Deliberation/Consideration is intimate connected to Values Activated; yet, to know the former would also involve interrogating decision-makers, to which there was no access. It could be argued that, like asking architects what values they perceived were active in a framing+decision-making scenario, an additional layer of interview questions could unfold perceptions of the client's deliberation process in which their values were activated. So too with client's decision formulation. Yet, literature points to human values as relatively stable and accessible—indeed measurable—constructs (Schwartz, 2009) as 'prominent antecedents' to decision-making (Cheng & Fleischmann, 2010:1). Furthermore, it could also be argued that CL Values Activated is not only an intimate part of CL Deliberation/Consideration, but values are also the primary accessible manifestation or facet of Deliberation/Consideration. Accordingly, Occam's Razor might see Activated Values as the most relevant, umbrella variable encompassing deliberation/consideration. So too with CL Framed Decisions encompassing CL Formulation of those decisions. CG1 evidence has also shown that evaluative decision justifications and explanations are frequent accompaniments with Framed Decisions, thus demonstrating the prior theorised construct of evaluation in frame analysis (Entman, 1993; Matthes & Kohring, 2008). It could also be argued that the key, accessible variables in an exploratory-descriptive study are better captured without fuzzy, unclear factors. Further, it is debatable whether architects would be able to veridically recall their clients thinking processes deliberation/consideration/formulation. Whereas ES1 pilot demonstrated that asking architects about their client values provided analysable evidence on values informing their problem framing For, as key variables manifesting values, client's drivers and priorities are parlance and known defining factors in the formation of architect's design briefs (Boyd & Chinyio, 2008:49); values, less well-known; hence, new research. Accordingly, equation (2) became the focus of the current research. Data on architects' values were also generated to respond to (3) when (2) has been studied and reported.

Other alternatives were examined as plausible and within reasonable doubt included:

(4a) Unknown or invisible factors → CL Deliberation/Consideration → CL Framed Decisions

(4b) AR Framed Decisions → Unknown or invisible factors → CL Framed Decisions

and similar variations. To rule out such plausible but unreliable alternative explanations, a reliable method needed to demonstrate forward and reverse relations in a way that established direct, verifiable connections between the three variables.

1.6. Coding and analysis matrices and procedure

Interviews by architect were transcribed then open coded thematically by project, then entered line-by-line manually into an MS Excel worksheet (OpenCoding tab). Either participant baseline data (BL) or project codes (ABC1) were ascribed to each data nugget regarding a project or client. Baseline data, for values-frames-decisions constructs. All values-frames-decisions were arranged by project to provide all the data for one client-architect-project case and then extracted into separate analysis matrix worksheets by project. Several interim but unsuccessful attempts were made at developing matrices to provide data arrangement and presentation that could be analysed for values and frames relationships to decisions. Various versions were attempted in tabular form via MS Excel. These provided the basis for a preliminary pattern analysis to establish a workable outline of the ways frames and values manifest and interact at key, representative points in a project. It was the process of returning to pen-and-paper and sketching out different options that provided the most fruitful results. The more successful versions showed how frames and values interacted in decision-making processes in sequences more representative of the processes encountered in real-world projects. The methodological process of their development is explained next.

1.7. Framing process sequencing and notation

To understand framing effects across the evolution of design projects in four key phases of design decision-making required a complete map showing antecedents, influents, consequents, and their connections/relationships. Accordingly, in developing the initial, simple linear equation (1/2), a naturalistic representation encompassing the design and construction process was needed to connect each phase to each other and to create a representative map of the framing and decision process. Several patterns auditioned were based on comparative analysis of Study 3 findings and Study 4 experience pattern analysis, then checked against the researchers' direct experience of the design and construction process in hundreds of projects at various stages. The best fit was explained by cascading sequences of values and frames antecedents, influents, and consequents as principal mechanisms of design decision-making concerning sustainability. Each phase is constructed from knowledge gained from previous phases plus any new information required to progress the project. This can be illustrated in the equations (5-7), below.

(5) Briefing: *V-CL-DPr* → F-CL-DPr → [F-CL-DPr/DM →] F-AR-DBr → *V-CL-DBr* → F-CL-DBr/DM →

(6) Initial/Interim Decision-making: F-AR-DMi → *V-CL-DMi* → F-CL-DMi →

(7) Critical Challenges & Decision-making: F-AR/SH-CC → *V-CL-CC* → F-CL-CC/DM

This shows in equation form what the maps would illustrate in diagrammatic form. The developments from (1) show four key phase suffixes DPr, DBr, DMi, and CC to contextualise and complete the sequence for a whole client-project. Bracketed [F-CL-DPr/DM →] indicates that frequently the client only presents a design problem (DPr) and does not make any decisions as part of that portion of the client's design problem framing (F-CL-DPr), such as all AR11 cases. When a decision is made resulting from the F-CL-DPr communication, it is tagged as F-CL-DPr/DM. DPr/DM, DBr/DM, and CC/DM all indicate decisions made (DM) in the prefixed phase (DPr, DBr, CC). To be completely consistent with equation (3), another layer outlining the role of architect's values (V-AR) can be prefixed later, as shown typically in (8).

(8) V-AR → F-AR → *V-CL* → F-CL-DM

Implicit in (5) Briefing: V-CL-DPr → F-CL-DPr is three things. First, in bringing a design problem to an architect, some decisions have already been made by clients in pursuit of a project and those are framed by clients in their communications of design problems, F-CL-DPr. Second, that as part of decision problem framing, clients either reveal information about their human values at that point in a project (V-CL-DPr), or they are elicited by the architect as part of his Design Brief portion of the conversation (DBr). Where neither were present, client values were analytically triangulated per methods in the following section. For logical clarity, these have been shown as *V-CL-DBr* → F-CL-DBr to naturally maintain the logic that values influence construction and communication of frames. Third, the briefing phase combines both DPr and DBr to accord with convention but are split into separate component constructs within the phase to provide analytical clarity. It implies that the design problem and design brief are frequently determined in the same interaction, where clients led by architects are co-constructing the brief. When this happens in one interaction, it appears to support Hey's (2007) model of the team framing cycle, which may iterate. However, when the design problem and solution co-evolve through the initial design concept phase where the architect is moving and resolving the design problem beyond the initial interaction, this appears to support Dorst and Cross's (2001) model of problem-solution co-evolution. Again, for analytical clarity and to represent knowledge boundaries, CL-DPr and AR-DBr have been separated to define clear points to capture both frames and values that permit analysis and mapping for relational influence.

Two further observations. First, the sequence (5-7) suggests all projects terminate in a critical challenge, which is incorrect. Critical challenges and the decisions made to resolve them are not always the final decisions concerning sustainability. Thus, the ends of some project-maps show a return to a standard framing and decision-making pattern, F-AR → *V-CL* → F-CL-DM. Second, client values are re-presented in italics, e.g. *V-CL-DBr*, to illustrate that they represent observer perceptions of values and not the client's characterisation of values. This is possible, allowable, and logical. Several recent reports on self-other agreement in values characterisation have demonstrated that observer reports of well-acquainted other's values are remarkably accurate when compared with self-perceptions captured through established instruments (Dobewall, Aavik, Konstabel, Schwartz, & Realo, 2014; Lee, et al., 2009; Skimina & Cieciuch, 2017), such as architect's reports of client's values. This is logical and analytically significant because, as previously established, what matters for framing sustainability is what the architect thinks are their client's values. But, to know more about mechanisms between values and frames variables, relations and relational operators need to be determined analytically.

1.8. Establishing relations and relational pathways

The purpose of this research was to identify key variables or factors impacting the cascading sequence (5-7) that are not immediately obvious in its presentation as '→'. *Impact* or *influence* are the key operators; both are relations between a variable and a subject/object, e.g. framing F-AR of sustainability *resonates* with client values V-CL which *induce//stimulate* client decisions they communicate as F-CL-DM. F-AR, V-CL, and F-CL-DM as variables are each connected via a relationship represented by relational operators, e.g. *resonate* and *stimulate* as types of action-relation. Therefore, establishing the relations between variables in a robust, reliable, and replicable manner was priority. Not only because, in literature, the relationship between values and frames in framing processes is under-researched and under-theorised, particularly in design and architecture.

Accordingly, findings based on framing process analysis and maps should demonstrate that not only are communication and decision frames built upon and employing values, but also that frames inherently communicate values, also known as value-frames (Ball-

Rokeach & Rokeach, 1987; Price, Tewksbury, & Powers, 1997). By framing a design problem in one way versus another represents an implicit value judgement that one outcome is preferable or more worthwhile or desirable to its alternative(s) (cf. Tzonis, 1992; Van Gorp, 2007; Volker, 2010). Indeed, Princeton WordNet's definition of value judgement is "an assessment that reveals more about the values of the person making the assessment than about the reality of what is assessed (2010)". Demonstrating relationships between values and frames was achieved in Study 3 by relational analysis.

To reliably demonstrate a relational pathway in variables required forward and reverse triangulation, whereby mapped pathways were analysed via coding and logical correlation assessments. The base set of Client Values V-CL-DPr were, (A) initially elicited and coded from architect's transcripts as the base set, then (B) logic assessed forward from coded values to client's preliminary Design Problem Frames as logical antecedent determinants, and next, (C) logic assessed backward/reverse from client's preliminary Design Problem Frames. The latter two were conducted and compared on-map in situ with the mapped Client Values in a process of analytic triangulation. This ensured that values sets/stacks/hierarchies were logically consistent with and related to antecedents and consequents through logic assessment. Then, to show a relational pathway it was required to demonstrate logical correlation in terms of the emergence, presence, or recalibration of client values hierarchies in relation to antecedent problem frames and consequent decision frames. Architects coded perceptions of client values normally took precedence over values coded from client frames for analytical continuity; F-CL coded values were normally appended to the architects' perceived client values hierarchy.

Once a set of Client Values was established for all Units-of-Analysis in a case via (A), a relational logic assessment was undertaken on each UoA. First, by backward/reverse assessing Client Decision Frames (B) as logically consistent, plausible, necessary, and sufficient effects of the contextual values in each column. Then, forward assessing values as logically consistent, plausible, necessary, and sufficient antecedent determinants of the Decision Frames. Logical correlation was assessed on, a) logic, such that relational pathways are constructed and marked by true and valid reasoning; based on known statements, events, or conditions; and marked by an orderly, reasoned, and consistent relation of parts; and b) non-statistical co-relation between the three variables, such that changes in the value of one variable are accompanied by changes in the other (as defined by Princeton WordNet Dictionary (2010)). A summary is provided in Table 38.

Table 38 Analytic triangulation and logical correlation assessment

Client Values Hierarchies analytic triangulation
Triangulated by assessing, in order of precedence: 1) Problem frames, Client values, and decision frames coded from architects' transcripts; 2) Coded client values hierarchies mapped in context by phase; 3) Client values checked forward from client's preliminary Design Problem Frames; 4) Client values checked backward from their consequent Decision Frames for logical consistency.
Units-of-Analysis logic assessment
Assessed logically by: 5) Backward/reverse assessing Client Decision Frames as logically consistent, plausible, necessary, and sufficient effects of the contextual values; 6) Forward assessing values as logically consistent, plausible, necessary, and sufficient antecedent determinants of the Decision Frames
Units-of-Analysis logical correlation assessment
Assessed as logically correlated: 7) Based on true and valid reasoning; 8) Based on known statements, events, or conditions; and 9) Marked by an orderly, reasoned, and consistent relation of parts.

This presentation necessarily implies that a frame is not context independent; one's frame is linked to its speaker, audience, context, and necessarily its content, as well as the process in which it manifested. Despite context dependence, generalisable patterns have previously been demonstrated using experience pattern mapping and relational analysis. Therefore, new generalisable patterns should be demonstrable in a larger data pool via the foregoing multi-level analysis by Unit-of-Analysis and case. This was trialled, road tested, and rolled out using analysis matrices, process maps, and map analyses as described next.

1.9. Analysis matrix procedure

Initially the coded framing process sequence was formatted into an MS Excel table vertically and linear from start to finish to form a Question Mining and Analysis Matrix (QM+AM). F-CL- and V-CL-DPr first, through DBr, then into DM and finally F-CL-CC2, with V-AR-CC and any closing comments. This provided the basic structure to start populating the matrix with projects in individual columns, and a final column with architect's baseline data. A complete matrix had several projects by column, each phase and construct by row, and each cell in a project column was populated with a category and code. This matrix showed a broad process with the content of each phase, but it remained necessary determine the relations between variables and examine the '►' mechanism or relational operators.

One case-set, AR14, was taken as a testbed with four client-project cases to audition and test methods for analysing relations and chains of values-frames-values-frames-decision effects. Of the data is was asked, What V-F-DM influence? Which frames are speaking to which values with what outcomes? What other, alternative interpretations/explanations? Is any of CL decision-making based on the way AR frames and connects to V-CL? The first attempt analysed each variable and populated separate columns with: 1) codes/categories, 2) analytical coding for each code, 3) thematising/pattern detection/analysis, and finally 4) values-frames relationships & DM outcomes. This began to unpack the process and detect finite drivers and relationships. But to unlock that data analysis matrix and provide more than a matrix, the relations and relational effects needed to be both analysed and presented in map form more succinctly (one architect's case-set filled 6xA3 sheets (AR14-AM/14-QM+AM tab)). Indeed, it was also not entirely effective in determining and presenting relations. It was felt that the tabular matrices lacked accessibility and clarity and were more a method of organising data and analysis. Nonetheless, the QM+AM provided a rich, detailed, and nuanced understanding of one architect's case-set and provided a physical and mental picture of analysed data to examine more closely the relations and effects. They were worthwhile and valuable steps in developing an understanding through iterative modelling of data and analysis for more rapid and succinct application to the remaining 19 cases. QM+AM serves as an initial sensemaking exercise leading to increasingly more successful versions of analysis and mapping. Interim stages of analysis and map development are discussed next.

Analysis and map development

Using the QM+AM as the basis for relations and effects analysis, three further attempts were made to analyse and illustrate relations of values and frames to decision outcomes in a single process map. Indeed, what was missing from previous attempts was demonstrating the sequence and its connections from (1) F-AR → *V-CL* → F-CL-DM. Revisiting the sequence and relational analysis method opened the door to successful attempts in three waves. The first was a variation of the X-Y tabular matrix with side Y-Axis containing the sequenced variables and phases by row, and top X-Axis containing columns for source/throwing variable, relational operator, target/receiving variable,

effects/outcomes (POS/NEG/NEUT.), including category types for each variable, and a separate summary relational analysis column of V-F-DM effects or outcomes (in G3-14-AM/14-SUM-FX-CLH2). This also quantified the frequency of POS/NEG effects to show a percentage for pos/neg outcomes, thus giving an indication of the relative success of each interaction at every phase, which could be evaluated by phase, case, and architect's case-sets. But it still lacked clarity because it collapsed one entire phase into one or two effects of values+frames effects on client decision frames; it was unclear precisely which frames and values interacted to create that effect.

This format was subsequently developed into two versions of increasing success. In the first, a linear vertical format was trialled in 14-SUM-FX-CLL3 as AR14-VF-FX-CLH2 tab, which successfully demonstrated relations and the cascading effect. This began to successfully show the complete sequence in a single column cascading from DBr to CC showing which values translated into specific frames at any point in the project and included a summary analysis of V-F-DM effects or outcomes. It also provided the POS/NEG/NEUT advancement with quantities. Once complete, 14-DM-VF-FX-SQH2 was rolled out to HSRL3 and BETG6. On reflection, it was unable to show enough about how values and frames affected each other or recalibrated over time, because all values were stacked in one column, and all frames in another—for both architects and clients—and presented a simple linear or stacked cascade. Thus, its drawback was that it was oversimplified, and the presentation format showed relations from which inaccurate assumptions could be made if misread.

A linear horizontal format was trialled as AR14-DECISIONS-TRKD tab taking each phase from the vertical and stacking them to form a Gantt-type timeline with linear links from throwing to receiving variables. It did so vertically within phase from Problem Frames to Values to Decision Frames, and horizontally from earlier phases to later, with a final column for analysis. This began to successfully demonstrate F-AR → V-CL → F-CL-DM and provided a clear account of antecedent, influent, and consequent. This combined mapping of vertical stacks serially in a horizontal format to show relationships between specific initial client values and consequent frames, including both their relationship to architect's subsequent values and frames in response. It adopted the POS/NEG/NEUT assessment with quantities. One notable facet that began to emerge from the former and current versions was more precise framing effects on client values.

It was previously assumed that client values were static throughout the design process. Until formatting and seeing this first useful map version, it was not previously appreciated that client's values can subtly shift or dramatically recalibrate priority depending on the problem to be decided and the way it was framed in relation to active values. The initial tabular matrix versions of framing processes only captured client values initially; the mapping was then only of problem frames as inputs and decisions as outputs in an iterative cascading form, which is insufficient to establish the needed connection between preliminary establishment of variables and later critical challenges found in ES2-ES3. Subsequent versions of matrices and maps capture sequential variation more as serial snapshots by phase. But when returning to and examining the matrix/maps for values present in initial and subsequent phases, it was noticed that sometimes alternative instantiations of the same values—or different values—were activated or present or being employed between initial and subsequent phases (e.g. 14-DM-VF-FX-CLH2; AR14-DM-VF-FX-CLL3; and AR14-DECISIONS-TRKD). On team reflection, a sketched map revision showed what the data was saying, that client's values can contextually shift or recalibrate in terms of type and priority based on the immediate context, the problem being decided, and how it was framed. To test the sketched version, it was then developed into an Excel worksheet using coded data nuggets from analysis matrices, AR14-VF-FX-CLL3, and AR14-DECISIONS-TRKD. This version produced the first clear, succinct, unified map, which was reviewed and agreed to roll out on all 20 cases and 100 units-of-analysis. This is described next.

1.10. Iterative detailed analysis and mapping procedure

Once the initial concept sketch was recognised as successful, it became straightforward to transpose all variables data from analysis matrix, filtered by architect-client-project case, to into new Excel workbook tabs by case. However, several refinements were made through earlier matrix and map stages/iterations in the detailed analytical steps employed to capture and analyse key variables from matrix to map showing relations between variables and their effects. Through those multiple iterations, it was learnt how to streamline the process by undertaking all detailed analysis needed for one data nugget/variable in one cell, accurately, succinctly, and visually, all on one map by case.

Accordingly, with open coding of all maps already complete, an iterative detailed analysis and mapping procedure was developed to populate all relevant codes for project, phase, variable, relation, variable-specific codes, and the data nugget in one cell. Values cells included value type, order, and value statement. Problem Frames cells included coded and categorised frame components. Decision Frames cells included coded and categorised frame components and relational operators, such as whether the problem frame activated or suppressed client values for decision outcomes as positive/negative/neutral. Decision frame cells also included the value type and order on which the decision was based, and when decision frames represent background decisions, agreements, instructions, clarifications, Requests-for-Information (RFIs), compromise, gain/loss, agreed principles, or reasons and justifications for the decision.

This most successful version showed a dual-axis X_{TOP}-Y-X_{BOT} graph with (X_{TOP}) problem frames along the top, horizontal axis in columns arranged temporally by phase from earliest-to-latest as left-to-right; (Y) values stacked on the left, vertical axis; and finally (X_{BOT}) client decisions along the bottom, horizontal axis in the same column as the problem frames about which clients were deciding. Arranged in columns by phase, each column represented a Unit-of-Analysis and time moves from left-to-right, project start-to-finish. Accordingly, variables from each project phase were mapped vertically in sequential columns and lines drawn between values in the stack/hierarchy to form maps of framing processes. Some client-projects had only three or four UoA's but several problem frames and multiple values.

In a major development from the previous map, key features of variations in client values landscapes are visually demonstrated via lines that connect individual values between project phases. Indeed, relational operators and actions of frames on values are shown diagrammatically through mapped lines showing adjustments and recalibrations to client values, presented as values stacks or hierarchies from highest to lowest priority, top to bottom. This rendering of the values components shows where, in response to a Problem Frame, client values hierarchies, a) remain stable or change order/recalibrate, b) where 'new' values are contextually activated and enter the values hierarchy, or earlier values are suppressed and therefore are downgraded in priority contextually in response to a frame when deciding. This innovation demonstrates which values respond to which frames for any given decision or clustered decisions as effect/s.

Consequently, the revised mapping method allowed each variable as analysed data nugget to occupy one cell and arranged to illustrate the impacts of frames on client values as decision-making foundations. Thus, Framing Process Maps provide a complete picture of an entire project interaction as a case, showing context, precedent/antecedent, and consequent. In total, 20 cases provided 100 Units-of-Analysis averaging 5/case. One further analytical puzzle-piece was needed to analyse within and across cases, described next.

1.11. Case pattern and relational analyses

To reliably detect patterns within and between cases, two further analysis methods were employed. Thematic pattern analyses (Braun & Clarke, 2006, 2012; Yin, 2014) were conducted on each horizontal row of problem frames, then horizontally on all values hierarchies, then horizontally on decisions. Findings from each were recorded in a final right-hand column for Pattern Analysis. This showed patterns in architect's handling or management of a project and its challenges by the type and quality of problem frames they posed to clients. It also showed patterns in client's values instantiations and hierarchies in response or reaction to the framed problem. Finally, it showed patterns in client's decisions made corresponding to their instantiated values hierarchy and framed problem.

A second analysis method was used to identify relationships between frames, values, and decisions within one interaction Unit-of-Analysis by phase, i.e. vertically. Using a form of map analysis, relational analyses were conducted to determine the directional focus, magnitude, sign, and meaning (Carley, 1993; Carley & Palmquist, 1992) of each frames-values-decisions stack. Each relational analysis was entered in the map by column/phase beneath the decisions. Units-of-Analysis were examined for the intentionality of framing, its effect magnitude and sign on decisions/outcomes, any potential priming of later values, and precise characterisation of the type of relation between frame-value-decision. Each relational analysis was analysed horizontally to produce a thematic relational pattern analysis (RPA) of the entire case. Later, each case pattern analyses, relational analyses, and RPA were then analysed.

1.12. Data and analysis presentation: maps and tables

In addition to framing process maps, one further form of data presentation was developed specifically to illustrate frame effects from the framing process. Maps show a contributorily-linked, conducive-conductive pathway from initial design problem through values present to decisions made and sustainability outcomes. Using the above relational analysis and logic assessment methods, the conduciveness and sequential contribution was demonstrated as a logical, relational sequence from problem frames to values instantiation/activation/suppression to decision frames.

These methods and presentation draw from the literature and findings demonstrate that frames inherently communicate values—by choosing to frame in one way versus another represents an implicit value judgement: that one outcome is preferable to its alternative(s). Accordingly, client's frames of their decisions can provide windows into their values, which through training, can be detected and made explicit (Burford, et al., 2015; Kelly, 2007; Steen & van de Poel, 2012). Maps demonstrate paths of progression and recalibration in framing processes through evolution of frames, values, and decisions in detail. Their purpose was to communicate two previously overlooked facets of design processes. First, they show which frames activate or suppress client's values in a process of deciding on a specific matter; with the client's decision this represents one Unit-of-Analysis. Second, maps show how/if/when architects respond to V-CL through framing-reframing and the effects of a framed response. They show how well architects manage and respond to change in the design process concerning sustainability by the type and quality of decisions and their outcomes.

Whereas Effects Tables have been extracted from maps to provide compendia of effects by outcomes and were done last. Framing effects were numerous and detailed; therefore, they are the subject of another report. Included in this report are Effects Summaries Tables to indicate the range of effects and outcomes associated with framing processes. In the framing process maps, each unit-of-analysis was evaluated for the effect that architects' frames had on the decisions which clients made concerning sustainability in terms of positive (+), negative (-), or nil (/); each decision was given a representative

symbol. All Frames-Values-Decisions triads (each a unit-of-analysis) were transposed into tables and arranged in order by two spectra. First, by their effect-sign; positive effects were split into two tables depending on whether they were experienced in the process of handling a Critical Challenge. Mixed effects were Second, tables were arranged in order from least to most committed/interested by the quality of the interaction. In the Tables, frames are presented in two parts: Frame-Type (Ft-AR) and Frames (F-AR). They are prefaced with Client Values V-CL and followed by the client decisions/outcomes (F-CL-DBr).

MA4 Conclusion

Thus Group-3 case-maps show 20 rich architect-client cases which confirm and refine previous mapping methods. A more complete, refined 'equation' for values influence pathways via frames is shown below, REQ3, which appends a prefix to SEQ2b:

$$\text{REQ3: (V)} \rightsquigarrow \text{VIA\_[FR]} = \langle(\mathrm{V_{AR}}) \rightarrow [\mathrm{F_{AR}}]\rangle \Rightarrow \langle(\mathrm{V_{CL}}) \rightarrow [\mathrm{F_{CL}}]\rangle \cdots$$

Together the maps showed 'values hierarchies' comprised clusters of active, instantiated values by priority, whilst simultaneously showing any other values which may have previously instantiated but have become contextually deactivated or dormant in response to contextually-relevant problem frames. This applied to both participants and their interpretations of their client's values, further detailed in Appendix-5.1. The map findings continued to show that participants clearly identified not only single or dual values they interpreted as influencing client's decision-making, but also clusters of multiple values in priority order—values hierarchies. Details of their characteristics and dynamics broadened this conceptualisation, and are therefore examined below. Relating patterns of these values-and-frames interaction dynamics to meaningful choice provides a new perspective on gaining and losing opportunities for meaningful choice, as examined in the three final parts.

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Appendix 5.2 SS2 F-V-DM Construct Framework

See pages below.

Appendix 5.2 SS2 V-F-DM Construct Framework distilled from case-maps

v3

VARIABLES -- SEQUENCING -- EFFECTS

ANALYSIS

IN THIS PHASE	FOR THESE CLIENT VALUES (V-CL) BASIC VALUE STATEMENT CLUSTER	THESE FRAMES (F-AR, F-CON…) FRAMES	HAD THESE EFFECTS ON D-M (via F-CL) OUTCOME: Green good for SD; Red bad for SD	DECISION TRIGGERS Act that sets in motion some course of events	VALUES DRIVERS WHICH VALUES are DRIVERS > SD++ OR SD--	PATTS+RELS ACCURACY
	Values below:	*Are TRIGGERED or ACTIVATED by Frames below:*	*To MOTIVATE the Decision-Outcomes below:*		<< *Relational analysis structure*	
AR14						**43%**
AR14-CF-CL2					**50.0%**	**2 / 2**
F-AR-DBr	TV-ST+CONS+OTC: Sustainability's Environmental Benefits; Environmental Sustainability IV-SE for TV-CONS+SE: Best Value Performance + Energy Efficiency IV-SE for TV-SE+CONS: Personal/Family Gain (new house)	*SD GOALS + OBJECTIVES:* *Long-term Energy Efficiency, passive design*	Elicits AGREEMENT, INSTRUCTION to proceed; Primes VFM	F-AR: Meeting CL objectives	TV-ST for TV-SE+CONS >> SD++	As private resi client VCL TV-ST decline, IV-SE increases and SD decreases; cost prevails later.
F-AR-DMi	IV-SE for TV-CONS+SE: Intelligent Spending / VFM (COST) TV-ST+CONS+OTC: SUST+ENV; IV-SE for TV-SE+CONS: Personal/Family Gain (new house)	*COST OF SD MEASURES: LCC+Building Performance V. CAPEX+Cost*	Elicits BALANCED AGREEMENT, INSTRUCTION in favour of MED-HIGH SD-Passive	F-AR: LCC-CAPEX performance v. cost spectrum	TV-ST for TV-SE+CONS_£ >> SD+	
F-AR-DMi	IV-SE for TV-CONS+SE: Intelligent, Balanced Spending / VFM; IV-SE for TV-CONS+SE: Balancing Agendas / Demands; TV-CONS+SE: Value-for-money; IV-SE for TV-SE+CONS: Personal/Family Gain (new house)	*DETAILING; ref ARs HARD WORK / EFFORT re: Façade, Beautiful long Bricks*	Elicits AGREEMENT, INSTRUCTION to Maintain design intent; Elicits JUSTIFICATION, to balance costs and INSTRUCTION to dismiss AR during construction.	***F-AR: Expensive detailing***	IV-SE+CONS & TV-SE+CONS_£££ >> SD-	
F-CON-CC	IV-SE for TV-CONS+SE: Intelligent, Balanced Spending / VFM; IV-SE for TV-CONS+SE: Balancing Costs & Agendas/Demand TV-CONS+SE: Value-for-money; IV-SE for TV-SE+CONS: Personal/Family Gain (new house)	*COST SAVINGS:* *We can do bricks cheaper…; You don't need that much insulation…*	Elicits AGREEMENT and significant CONCESSIONS AGAINST SD	F-CON: Cost savings	IV-SE+CONS & TV-SE+CONS_£££ >> SD-- Balancing Costs & Agendas/Demand; Value-for-money	
AR14-CF-CL3					**60.0%**	**2 / 1 / 3**
F-AR-DBr	IV-SE for TV-SE-CONS: Simplicity for Cost-effectiveness + IV-SE for TV-SE: Site Maximisation (for added value / profit) TV-SE with TV-ST: Profit (with Added Value)	*OBJECTIVES TO FULFIL CL GOALS: 'Good Quality & Higher Standards to get planning'* *SDDM TACTICS, INTRO IDEAS: Introducing SD ideas re: GWR*	Elicits REJECTION; a step too far; locates BOUNDARY; *ACTIVATES* VCL: SIMPLICITY for Cost-effectiveness	F-AR: BOUNDARY-FRAMING greywater recycling	IV-SE for TV-SE-CONS_£ >> SD- SIMPLICITY	As semi-enlightened private housing developer, TV-ST bring some SD benefits; PROFIT still prevails.
F-AR-DMi	TV-ST+SE-UNIV: Landscape AND Conservation + TV-ST for IV-SE: Good Quality/Added Value IV-SE for TV-SE-CONS: Experience-based decision-making	*DESIGN APPROACH: 'Environmental Design preface to PROGRESSING THE DESIGN, Storage Location / Appearance: Site Aesthetics' negative impact*	Elicits significant CONCESSIONS in favour of SD; retaining landscape	F-AR: TV-ST fr: environmental aesthetics	TV-ST+SE-UNIV >> SD+ Landscape+Conservation	
F-AR-DMi	IV-SE for TV-SE-CONS: Experience-based decision-making IV-SE for TV-SE: Site Maximisation (for added value / profit) TV-SE with TV-ST: Profit (with Added Value)	*VN-OEF DESIGN-DEV / PROGRESS: Renewables*	Elicits Cautious Openminded AGREEMENT; Volunteered rooftop PV solution	VN-OEF Values-neutral open-ended frames	IV-SE for TV-SE-CONS_£ >> SD+ Experience; added-value	
F-AR-DMi	IV-SE for TV-SE-CONS: Simplicity TV-SE with TV-ST: Profit (with Added Value) IV-SE for TV-SE-CONS: Experience-based decision-making	*VN-OEF DESIGN-DEV / PROGRESS: MEP Heating & Ventilation Systems*	Elicits Volunteered DECISION and JUSTIFICATION: *'Combi-boilers for easy legal separation'*	VN-OEF Values-neutral open-ended frames	TV-SE_£ >> SD- Profit (simplicity)	
F-AR-DMi	IV-SE for TV-SE-CONS: Simplicity IV-SE for TV-SE: Site Maximisation (for added value / profit) TV-SE with TV-ST: Profit (with Added Value) IV-SE for TV-SE-CONS: Experience-based decision-making	*VN-OEF DESIGN-DEV / PROGRESS: Structural Frame / Thermal Mass: 'What do you want to do…?'*	Structural solution (conc. frame) decision on cost (i.e. not appropriateness for 'awkward' site or sustainability)	VN-OEF Values-neutral open-ended frames	TV-SE_£ >> SD- Profit (simplicity)	
F-PC-CC > F-AR-CC	IV-SE for TV-SE-CONS: Simplicity IV-SE for TV-SE-CONS: Experience-based decision-making TV-SE with TV-ST: Profit (with Added Value)	F-PC-CC: OUTCOME IMPROVEMENT: *'Adding more materials for Improved Chances at Planning'* F-AR-CC: #CHALLENGE-FRAMING + EVALUATION // JUDGEMENT: *"Overexcited Planning Consultant (PC) who thinks he's a designer"; "There's a limit…";* RECOMMENDATION to maintain *'Simple well-detailed [design strategy]"* JUSTIFICATION: *'Cheaper, more sustainable, less waste…'*	Elicits AGREEMENT, INSTRUCTION to Maintain design intent & simplicity; Elicits JUSTIFICATION, for Cost-Effectiveness	***F-PC: Adding more materials (i.e. lacks simplicity, costs more)***	TV-SE_£ >> SD- Profit (simplicity)	

Appendix 5.3 SS2 V-F-DM Construct Framework distilled from case-maps

v3

VARIABLES -- SEQUENCING -- EFFECTS				ANALYSIS		
IN THIS	FOR THESE **CLIENT VALUES (V-CL)**	THESE **FRAMES (F-AR, F-CON…)**	HAD THESE **EFFECTS ON D-M** (via F-CL)	DECISION **TRIGGERS**	VALUES **DRIVERS**	**PATTS+RELS**
PHASE	***BASIC VALUE STATEMENT CLUSTER***	***FRAMES***	***OUTCOME:*** ***Green good for SD;*** ***Red bad for SD***	*Act that sets in motion some course of events*	***WHICH VALUES are DRIVERS > SD++ OR SD–***	
AR14-CF-BETG6					**20.0%**	**2 / 1 / 2**
F-AR-DBr	IV+TV-SE-CONS+OTC: Appropriate Design Styling for: **TV-SE-OTC+CONS: Lovely, Traditional House** **TV-SE-CONS: Traditional, Conservative Lifestyle**	***Unclear/Questioning**: 'WHY mock Victorian; daft, foreign route?'* ***SENSE-MAKING:** 'He wants a lovely house, but none of it makes sense to me to be honest'*	Elicits INDECISION, DESIGN CHANGES on style / materials	AR ambivalence > CL indecision	IV+TV-SE-CONS >> ?? Traditional, Conservative House + Lifestyle	AR missed opportunity to tap into V-CONSERVATION. Modest SD+ due to quality not SD considerations. SE-Conservation+Traditi on driving throughout.
F-AR-DMi	IV+TV-SE-CONS+OTC: Appropriate Design Styling for: **TV-SE-OTC+CONS: Lovely, Traditional House** **TV-SE-CONS: Traditional, Conservative Lifestyle** IV-SE for TV-SE+CONS-Sec: Benefits of Cost-Effectiveness **for Saving Money**	*MISSED OPPORTUNITY for SD;* *CL not thinking of SD, Frustrating;* *AR's Spectrum Boundary judgement:* *"It's just so far from the spectrum that I didn't even try and bother"*	Elicits POSITIVE DECISION, JUSTIFICATION: *'Georgian-Victorian type thing' little more cost-effective*	AR ambivalence > CL sets course	IV+TV-SE-CONS >> ?? Traditional, Conservative House + Lifestyle	
F-AR-DMi	IV+TV-SE-CONS+OTC: Appropriate Design Styling for: **TV-SE-OTC+CONS: Lovely, Traditional House** **TV-SE-CONS: Traditional, Conservative Lifestyle**	*Sustainable timber stairs detailing quality and time, evaluation; Specialist Contractor recommendation*	**Elicits POSITIVE DECISION, JUSTIFICATION:** ***'Go with the specialist contractor for high-quality, sustainable timber stair…'***	F-AR: High-quality	IV+TV-SE-CONS >> SD+ Traditional, Conservative House + Lifestyle	
F-AR-CC	IV-SE for TV-SE+CONS-Sec: Cost-Control (Avoid Overspending, Completion) IV-SE for TV-SE+CONS-Sec: Benefits of Cost-Effectiveness for **Saving Money** IV+TV-SE-CONS+OTC: Appropriate Design Styling ¬ any ££ for: **TV-SE-OTC+CONS: Lovely, Traditional House ¬ any ££** **TV-SE-CONS: Traditional, Conservative Lifestyle ¬ any ££**	*1) High costs, but CL prior awareness;* *2) Understanding of Brief/Spec reduction because of Cost / Expensiveness;* *3) Concern about contractor with limited capability*	Elicits EVALUATION: "Costs 'more expensive than I thought'" Elicits NEGATIVE DECISION+JUSTIFICATION: 1) Sustainable timber stair *'too expensive'; 'Going to something cheaper; Budget taken up elsewhere'* 2) COST SAVINGS: REDUCE AR SITE PRESENCE	***F-QS: High tender prices***	IV-SE for TV-SE-CONS_££ >> SD- Cost-Control (Avoid Overspending, Completion)	
F-CON-CC	IV-SE for TV-SE+CONS-Sec: Cost-Control (Avoid Overspending, Completion) **TV-SE+CONS-Sec: Saving money** IV-SE for TV-SE+CONS-Sec: Benefits of Cost-Effectiveness for **Saving Money** IV+TV-SE-CONS+OTC: Appropriate Design Styling ¬ any ££ for: **TV-SE-OTC+CONS: Lovely, Traditional House ¬ any ££** **TV-SE-CONS: Traditional, Conservative Lifestyle ¬ any ££**	*CON Offers COST SAVINGS on stairs*	Elicits NEGATIVE DECISION+JUSTIFICATION: 1) 'Cost-saving Decisions made on site, made changes to details not originally agreed' 2) 'Specifications and insulation reduced to minimum regulations to save money'	F-CON Cost savings	IV-SE for TV-SE-CONS_££ >> SD- Cost-Control (Avoid Overspending, Completion)	
AR15						**68%**
AR15-CF-HHE1A					**63.6%**	**2 / 7 / 3**
F-AR-DBr	IV-SE-OTC for TV-SE: Exploring Potential for: **TV-SE (+CONS?): Dream House** **TV-ST/SE-CONS: Sustainable Lifestyle, Not Money** **TV-ST+SE: Trust, Respect the Professionals** IV-SE for TV-SE: Understanding SD Technical Process; Knowledge **TV-ST/SE: Gaining Knowledge via Research**	**REQUIREMENTS / CHALLENGES FRAMES:** *'1] Difficult site requires PPS7, incl carbon zero, for planning; everything to do with Code 6; 2] PPS7 requirements for exemplary design more onerous than just Code 6'* **SD MEASURES / DESIGN RESPONSES FR:** *'Orientation (& site use), sunlight and passive solar gain'* **APPROACH/METHOD / JUSTIFICATION FR:** *"There was no need to try and usher them anywhere, they just got it full frontal from the planners: Code 6 'given to us on a plate' by the planners"*	(+) EARLY CL TV-ST DECISION: 'Going for Code 6, submit planning, including wind turbine, PVs, etc. "…it was everything to do with Code 6".' (+) BACKGROUND / JUSTIFICATION FR: 'Decision to purchase and proceed on difficult site precipitated CL intrigue in SD and SD process; Researched SD measures, fascinated by the process... "He got into it quite a long way"'	F-AR: COUNTRYSIDE SITE > PPS7 > CODE 6	TV-SE (+CONS?) >> SD++ Dream House + Sustainable Lifestyle	
F-AR-DMi	**TV-SE (+CONS?): Dream House, Cost doesn't matter** **TV-ST/SE-CONS: Sustainable Lifestyle, Not Money** IV-SE-OTC for TV-SE: Exploring Potential **IV-ST+SE: Trust, Respect the Professionals** IV-SE for TV-SE: Understanding SD Technical Process; Knowledge **TV-ST/SE: Gaining Knowledge via Research**	**SPECIFIC SD MEASURES / DESIGN RESPONSES FR:** *Orientation; … biomass boilers, wood-burning stoves, high insulation levels… triple glazing, … green roofs, PV's, wind turbines…?*	(+) AGREEMENT, DECISION FR: "They went in for … everything—the lot…" (+) AGREEMENT, PRINCIPLES FR: "They bought into the principles of sustainability" …'perhaps wants a show house for his solar panel business' (+) JUSTIFICATION FR: "They assured us it was about a sustainable lifestyle and not about the money" (-) INSTRUCTION, GAIN: '…asked us to investigate potential for enlarging the house'	F-AR: Measures to achieve Code 6	TV-SE (+CONS?) >> SD++ Dream House + Sustainable Lifestyle	
F-AR-CC1	**TV-SE (+CONS?): Dream House, Cost doesn't matter** **TV-ST/SE-CONS: Sustainable Lifestyle, Not Money** IV-SE-OTC for TV-SE: Exploiting Potential	**COST/FACT CHALLENGE FR**: *Area costs the most money (in response to CL request to enlarge)*	(-) INSTRUCTION, GAIN FR: 'Increase the size' (+) INSTRUCTION, PROGRESS FR: 'Submit application for planning consent with everything'	F-AR: Challenging CL desire for Dream House	TV-SE (+CONS?) >> SD+ Dream House	
F-AR-CC2	**TV-SE (+CONS?): Dream House, Cost doesn't matter** **TV-ST/SE-CONS: Sustainable Lifestyle, Not Money** IV-SE-OTC for TV-SE: Exploring Potential	**EXISTENTIAL CHALLENGE + ACTION RECOMMENDATION FR:** *Major local community objection to wind turbines in planning consultations; recommendation to remove and increase PV.*	(+/-) INSTRUCTION, COMPROMISE for PROGRESS FR: 'Take out the turbines and increase PVs to save the project in Planning'	F-Community: Objection = EXISTENTIAL CHALLENGE	TV-SE (+CONS?) >> SD+/- Dream House + Sustainable Lifestyle	

Appendix 5.3 SS2 V-F-DM Construct Framework distilled from case-maps

v3

VARIABLES -- SEQUENCING -- EFFECTS

ANALYSIS

IN THIS PHASE	FOR THESE CLIENT VALUES (V-CL) BASIC VALUE STATEMENT CLUSTER	THESE FRAMES (F-AR, F-CON…) FRAMES	HAD THESE EFFECTS ON D-M (via F-CL) OUTCOME: Green good for SD; Red bad for SD	DECISION TRIGGERS Act that sets in motion some course of events	VALUES DRIVERS WHICH VALUES are DRIVERS > SD++ OR SD--	PATTS+RELS
F-AR-CC3	IV-ST/SE: Self-reflection/self-recognition; financial limitations IV-SE for TV-SE: Serial opportunity **for profit** [and interest] IV-SE: (Knowledge &) Opportunity for Profit (& Interest)	**PROGRESS FR:** *Planning consented; how to proceed; tender and construction?*	(/) INSTRUCTION, PROGRESS FR: 'Clear the site in preparation' (-/+) INSTRUCTION, JUSTIFICATION: "In the end they didn't build it; I think they didn't have enough money" (-/+) OUTCOMES: "They sold it for a large sum of money; … they cleared the site, so it's got consent in perpetuity… we're just doing the working drawings for another client!"	CONSENT granted Not enough money to build out (?) ***Money: Opportunity for Profit too good to miss***	TV-SE_£££ >> SD-- / ++ Dream House + Sustainable Lifestyle	
AR15-CF-DU19.2					**80.0%**	**1 / 4**
F-AR-DBr	IV-SE for TV-SE: Getting Planning Consent IV-SE for TV-SE: Maximise Site to Maximise Land Value TV-SE: Maximum Profit	**SD APPROACH FRAMES: ESTABLISHING CONTEXTUALLY APPROPRIATE FIRST PRINCIPLES:** *'Set up the Scheme Concept right [with Passive Design] re: site use, layout, orientations, solar shading'* **GOALS, JUSTIFICATION; BR IMPROVEMENT FRAMES:** *"Try to get planning by Pledging Code 4 to achieve better than building regs (and to force future developers' hand, hoping they won't resubmit to alter Conditions)'*	(+) IV-SE for TV-SE GAIN-RELATED RECEPTIVITY: 'Three previous applications for the site had been turned down; Receptive to any ideas that would get a consent'	F-AR: Principles: New ideas; BR Improvements	TV-SE_£££ >> SD+ Maximum Profit	F-AR Principles-Strategy-Measures worked well to mitigate previous CL losses. If SD approach/measures add value, increase profit, then agreed; otherwise not agreed.
F-AR-DMi	TV-SE: Make money on asset however possible (Easy Money) IV-SE for TV-SE: Getting Planning Consent IV-SE for TV-SE: Maximise Site to Maximise Land Value TV-SE: Maximum Profit	**DM TACTICS / JUSTIFICATIONS, SD/DESIGN MITIGATING PREVIOUS FAILURE:** *'Demonstrate exemplary design to transcend or mitigate three failed applications'* **APPROACH / JUSTIFICATIONS: IMPROVEMENT FR:** *Promising code level improvements to get through planning (and [surreptitiously] force [future developers] to do something a bit better)*	(+) TV-SE INSTRUCTION+PRIOR JUSTIF.: 'Do whatever necessary to achieve a consent'	F-AR: Strategy: New ideas; Improvements, Exemplary design	TV-SE_£££ >> SD+ Maximum Profit	**Improvements, benefits, gain consent frames appeal to VCL Profit**
F-AR-DMi	TV-SE: Make money on asset however possible (Easy Money) IV-SE for TV-SE: Getting Planning Consent IV-SE for TV-SE: Maximise Site to Maximise Land Value TV-SE: Maximum Profit	**OBVIOUS, CONTEXTUALLY-SPECIFIC PASSIVE DESIGN MOVES:** *"Absolutely ideal site for orientation; East-West street with a South-facing frontage; Big South-facing lounge windows with big balconies giving solar shading in the summer; it's a no brainer." Achieved 41 flats.* **DD APPROACH, SD**: *Capitalising on obvious contextual features: "It was the most obvious thing in the world; unclear why no-one else managed to achieve that"*	(+) TV-SE INSTRUCTION+PRIOR JUSTIFICATION: Proceed to planning with recommendations	F-AR: Measures; Passive Design moves	TV-SE_£££ >> SD+ Maximum Profit	
F-AR-CC	IV-SE for TV-SE: Financial Valuation (of sustainability features) for Profit TV-SE: Maximum Profit TV-SE: Make money on asset (Easy Money) IV-SE for TV-SE: Maximise Site to Maximise Land Value IV-SE for TV-SE: Getting Planning Consent IV-SE for TV-SE: Minimum Involvement	**F-AGNT-CC: COST/BENEFIT/RETURN:** 'Agent tells CL it's going to cost £500 more (per unit) to build a roof terrace than they'll get back (in return)'	(-) TV-SE COST/LOSS INSTRUCTION + JUSTIFICATION: No financial return, no roof terrace: it's going to cost £500 more to build than the return; they won't spend that £500.	**F-AGNT: Extra cost, no £ return**	TV-SE_£££ >> SD- Maximum Profit	
F-AR-CC	IV-SE for TV-SE: Financial Valuation (of sustainability features) for Profit TV-SE: Maximum Profit TV-SE: Make money on asset (Easy Money) IV-SE for TV-SE: Maximise Site to Maximise Land Value IV-SE for TV-SE: Getting Planning Consent IV-SE for TV-SE: Minimum Involvement	**F-AR-CC: APPROACH+JUSTIFICATIONS, SD:** *Going to planning: "We didn't have to have that [sustainability] conversation with anyone [it was an integral part of the passive design solution]"* **SD REQUIREMENTS +JUSTIFICATIONS:** *'No renewables required for planning at the time, none included [per profit-focused commercial imperative].*	F-PO-CC: (+) ACTION+RESULT: We sold that [Scheme and Approach] to the planner and it went through ok	F-AR Principles-Strategy-Measures for SD + BR Improvements	TV-SE_£££ >> SD+ Maximum Profit	
AR15-CF-SQH3 (HMH3)					**60.0%**	**2 / 3**
F-AR-DBr	IV-SE for TV-SE: TANGIBLE, PRACTICAL BENEFITS for **Future-Proofing, Low Running Costs** **TV-SE (/ST?): LONG-TERM COMMITMENT** **TV-SE: NICE HOME WITH CONNECTION**	CHALLENGE FRAMES; SOLUTION-TACTIC FRAMES: 'Outside developable area, challenging in planning; Seek exemplary design justification to satisfy NPPF Para55 in countryside' BENEFIT FRAMES of PRACTICAL SOLUTIONS: '***SD payback periods: Long-term commitment provided "lines of argument"*** BENEFIT FRAMES of TANGIBLE SOLUTIONS re long-term payback; 'Thicker insulation for lower fuel bills; PVs on 12-yr paybacks'	(+) IV-SE & TV-SE AGREEMENT + INSTRUCTION: Proceed towards 'exemplary design', Thick Insulation and PVs	F-AR: COUNTRYSIDE SITE > PPS7/NPPF-P55 > Exemplary design F-AR: Benefit frames; Tangible solutions	IV-SE for TV-SE_£ TANGIBLE, PRACTICAL BENEFITS for Future-Proofing, Low Running Costs TV-SE >> SD++ LONG-TERM COMMITMENT	

Appendix 5.3 SS2 V-F-DM Construct Framework distilled from case-maps

v3

VARIABLES -- SEQUENCING -- EFFECTS				ANALYSIS		
IN THIS	FOR THESE **CLIENT VALUES (V-CL)**	THESE **FRAMES (F-AR, F-CON…)**	HAD THESE **EFFECTS ON D-M** (via F-CL)	DECISION **TRIGGERS**	VALUES **DRIVERS**	**PATTS+RELS**
PHASE	***BASIC VALUE STATEMENT CLUSTER***	***FRAMES***	***OUTCOME: Green good for SD; Red bad for SD***	*Act that sets in motion some course of events*	***WHICH VALUES are DRIVERS > SD++ OR SD–***	
F-AR-DMi	IV-SE for TV-SE: TANGIBLE, PRACTICAL BENEFITS for **Future-Proofing, Low Running Costs** **TV-SE (/ST?): LONG-TERM COMMITMENT** **TV-SE: NICE HOME WITH CONNECTION**	DESIGN SOLUTION APPROACH FRAMES, IMPLIED BENEFIT: [We suggest] 'Cleaning it all up and stripping off all the unnecessary stuff" PLANNING-CONSENT APPROACH SOLUTION-FRAMES: 'Go to pre-app with NPPF Para 55 justification of exemplary design in the countryside' DESIGN SOLUTION APPROACH FRAMES, #IMPLIED BENEFIT: 'Concept and planning designed as a bespoke, contemporary interpretation of a (minimalised) traditional building'	(+) IV-SE & TV-SE AGREEMENT + INSTRUCTION: 'Agreed to go to planning with P55 Justification and modern take [interpretation] on a traditional building; Stripping off unnecessary detail.'	F-AR: Benefit / Implied Benefit frames	IV-SE for TV-SE_£ TANGIBLE, PRACTICAL BENEFITS for Future-Proofing, Low Running Costs TV-SE >> SD++ LONG-TERM COMMITMENT	Benefits frames appeal to Benefits- and Gain-related values, alongside a tertiary appeal and maintenance of Commitment and Connection values likely resulting in agreement with P55 justification
F-AR-DMi	IV-SE for TV-SE: TANGIBLE, PRACTICAL BENEFITS for **Future-Proofing, Low Running Costs** **TV-SE (/ST?): LONG-TERM COMMITMENT** **TV-SE: NICE HOME WITH CONNECTION** **TV-SE: Maintaining INDEPENDENCE**	PLANNING JUSTIFICATION, REVISED: "The Council is woefully behind on 5-year housing land supply; So, we just went for that justification. We didn't need the Para55 justification in the end." SD MEASURES + JUSTIFICATION: 'Fluke bus stop nearby will satisfy sustainable location requirements'	(+) IV-SE & TV-SE AGREEMENT: 'Agreed to submit planning with housing supply justification in sustainable location'	F-AR: Benefit / Implied Benefit frames	IV-SE for TV-SE TANGIBLE, PRACTICAL BENEFITS for Future-Proofing... TV-SE >> SD++ LONG-TERM COMMITMENT	TANGIBLE; PRAGMATIC; PRACTICAL BENEFITS as ex-builder, sees little value in AR architectural detailing; INDEPENDENCE becomes more difficult with less money)
F-CON-CC	IV-SE for TV-SE: Cost Savings / **Value-for-Money** IV-SE for TV-SE: TANGIBLE, PRACTICAL BENEFITS for **Future-Proofing, Low Running Costs** **TV-SE: Maintaining INDEPENDENCE (watching the spending)** **TV-SE (/ST?): LONG-TERM COMMITMENT**	F-CON-CC: COST + CHANGE FRAMES: 'We can get it done cheaper somewhere else'	(-) IV-SE COST REDUCTION INSTRUCTION: 'Builder-friend can get detail/construction design elsewhere'	**F-CON: CHEAPER COST elsewhere**	IV-SE for TV-SE_££ >> SD- Cost Savings / Value-for-Money	
F-CON-CC	IV-SE for TV-SE: Cost Savings / **Value-for-Money** IV-SE for TV-SE: TANGIBLE, PRACTICAL BENEFITS for **Future-Proofing, Low Running Costs**	F-CON-CC: COST + QUALITY-REDUCTION FRAMES: Make it more conventional, save money *F-AR-CC: "They just did the traditional 'thing" 'dumbed it down', lost some important features. 'They went ahead built something different: the basic volume is obviously the same because of planning, windows in about the right places, but [poor/ inappropriate/ conventional] detailing'*	(-) IV-SE COST REDUCTION INSTRUCTION: 'Lose some details and SD features, reduce PVs and reduce insulation to minimums.' *AR-EVAL: the 'usual/normal' cringeworthy execution when AR not involved thro' construction; Would take a different approach if I were designing it for someone else to take forward.*	F-CON: Make it conventional; Save money	IV-SE for TV-SE >> SD-- Cost Savings / Value-for-Money	
AR16						**66.67%**
AR16-CF-VRD1					**100.0%**	**6**
F-AR-CC1	IV-ST/SE: Higher standards, decent building IV-SE for TV-SE-CONS: Thermal efficiency IV-ST-UNIV for TV-SE-OTC/CONS: Future Marker; Sustainable Image, Identity IV-SE-CONS: Cost-Effectiveness **TV-ST-CONS: Benevolence, Caring for Staff**	BRIEF RESPONSE ACTIONS with EVALUATION, thinly-veiled CRITICISM: 'Designed them a conventional, pitched roof Barratt-style vicarage'	(+) CL changing mind after seeing initial design; CHANGE ORDER: "they suddenly realized, 'no, no…' game change. 'Chuck that out the window, start again'. Better fee, decent building." (+) SD INSTRUCTION: 'we need a design for a thermally efficient vicarage' (+) JUSTIFICATION, IDENTITY: 'It's a marker for our future; we want a sustainable identity'	**F-AR DISPARAGEMENT & conventional design**	IV-ST-UNIV for TV-SE-OTC/CONS Future Marker; Sustainable Image, Identity TV-ST-CONS >> SD++ Benevolence, Caring for Staff	
F-AR-CC2	IV-ST/SE: Higher standards, decent building IV-SE for TV-SE-CONS: Thermal efficiency IV-ST-UNIV for TV-SE-OTC/CONS: Future Marker; Sustainable Image, Identity **TV-ST for TV-ST+SE: Green Agenda for Sustainability Identity** **TV-ST-CONS: Benevolence, Caring for Staff**	CHANGE TO SD APPROACH, IMPLICATIONS FR: 'Conventional design, low fee! Full green scheme, more time, different beast, higher fee…!'	(+) RECALIBRATION OF SD WANTS: 'we want passive house. Passive house standards. … we want a green, PassivHaus vicarage.' (+) AGREEMENT, INSTRUCTION: "they bought into it, and I spent more time on it. So, I got the building right."	F-AR: Full green scheme	TV-ST for TV-SE-OTC/CONS Green Agenda; Future Marker; Sustainable Image, Identity TV-ST-CONS >> SD++ Benevolence, Caring for Staff	
F-AR-CC3	IV-ST/SE: Higher standards, decent building IV-SE for TV-SE-CONS: Thermal efficiency IV-ST-UNIV for TV-SE-OTC/CONS: Future Marker; Sustainable Image, Identity **TV-ST for TV-ST+SE: Green Agenda for Sustainability Identity** **TV-ST-CONS: Benevolence, Caring for Staff**	SPECIFIC DETAILED SD MEASURES: 'Orientation, minimal windows, thermal mass…' AR EVALUATION FR: 'Game change [towards green design]'	(+) AGREEMENT, INSTRUCTION: "they were buying into the green agenda, they bought it [all]"	F-AR: Detailed measures + POS EVAL	TV-ST for TV-SE-OTC/CONS Green Agenda; Future Marker; Sustainable Image, Identity TV-ST-CONS >> SD++ Benevolence, Caring for Staff	

Appendix 5.3 SS2 V-F-DM Construct Framework distilled from case-maps

v3

VARIABLES -- SEQUENCING -- EFFECTS

ANALYSIS

IN THIS	FOR THESE **CLIENT VALUES (V-CL)**	THESE **FRAMES (F-AR, F-CON…)**	HAD THESE **EFFECTS ON D-M** (via F-CL)	DECISION **TRIGGERS**	VALUES **DRIVERS**	**PATTS+RELS**
PHASE	*BASIC VALUE STATEMENT CLUSTER*	*FRAMES*	*OUTCOME: Green good for SD; Red bad for SD*	*Act that sets in motion some course of events*	*WHICH VALUES are DRIVERS > SD++ OR SD–*	
AR16-CF-HSB2					**75.0%**	**1 / 3**
F-AR-DBr	TV-ST-UNIV/BENEV+SE-OTC: Green Building TV-ST/SE-CONS: Conservation, Restoration: MNO	PASSIVE SD APPROACH FR: 'bolt [sustainability] in at the beginning; everything envelope, then technologies and systems: boilers and renewables...'	(+) TV-ST/SE-OTC AGREEMENT, INSTRUCTION: 'OK, proceed on that basis...'	**F-AR: Passive approach + TECH&SYST bolt-ons**	TV-ST-UNIV/BENEV+SE-OTC >> SD++ Green Building	
F-AR-DMi	TV-ST-UNIV/BENEV+SE-OTC: Green Building TV-ST/SE-CONS: Conservation, Restoration: MNO	GOOD PRACTICE / PASSIVE SD DETAILS FR: 'passive design: highly insulated envelope & windows; HE boilers, then everything else, renewables, etc.' BOUNDARY FR as PROPER GREEN: 'do you want a single heating system [boiler], or do you want a multiple heating system [boiler + solar thermals]?'. TWO SYSTEMS, ADDITIONAL COST, CHALLENGE FR: 'If you're buying up to that additional cost of 'two systems"; 'Additional cost of renewables as "bolt-on's, add-on's"; function depending on climate (i.e. not always working)'	(+) TV-ST/SE-OTC AGREEMENT, INSTRUCTION: "[Go with the] biomass, heat recovery, PVs, double-glazing, you name it… we did everything, and it worked [incl. HE boilers, and solar thermals]"	F-AR: Passive approach + TECH&SYST bolt-ons; TWO SYSTEMS, ADDITIONAL COST, CHALLENGE	TV-ST-UNIV/BENEV+SE-OTC >> SD++ Green Building	
F-AR-CC1	IV-SE-CONS: Reliability (for convenience) TV-ST-UNIV/BENEV+SE-OTC: Green Building TV-ST/SE-CONS: Conservation, Restoration: MNO TV-ST/SE-CONS: Family; Peace / Privacy IV-SE-CONS: Convenience	CC1: EXPERIMENTATION vs RELIABILITY re SYSTEM DETAILING: "...do you want to be a petri dish, do you want to be an experiment, or do you want to deliver? […] If you want to trailblaze or come up with something completely new, it may work, it may be an f-ing disaster. Do you want to take that risk, or do you want to use products that actually you know are working?" CC1: BUY-INTO TECHNOLOGY + OPERATION: "it's a question of buying into a technology and into a way of operating and using the building."	(+/-) TV-ST/SE-CONS AGREEMENT, INSTRUCTION: 'We want to use products that you know are working'	F-AR: RELIABILITY RISK	IV-SE-CONS >> SD Reliability (for convenience) (poss. Risk-aversion)	
F-AR-CC2	IV-SE-CONS: Reliability (for convenience) TV-ST-UNIV/BENEV+SE-OTC: Green Building TV-ST/SE-CONS: Conservation, Restoration: MNO TV-ST/SE-CONS: Family; Peace / Privacy IV-SE-CONS: Convenience	CC2: SPECIFIC DETAILED SD MEASURES: '… we'd suggest you go for biomass boilers, whole-house heat recovery, slimline double-glazing, improved thermal insulation and airtightness, improved acoustic performance; … low-energy lighting and appliances, and a heating management system...'	(+) TV-ST/SE-OTC+CONS AGREEMENT, INSTRUCTION: 'They bought in… all of it, [just needed to make sure it works]'	F-AR: PERFORMANCE	IV-SE-CONS Reliability (for convenience) TV-ST/SE-CONS >> SD++ Family; Peace / Privacy	
AR16-CF-LHB3					**25.0%**	**2 / 1 / 1**
F-AR-DBr	TV-SE/ST-OTC: Good, contemporary modern design TV-SE-OTC-HEDO: Self-enjoyment, Views of the estate	DESIGN CONCEPT SOLUTIONS: 'Sliding glass wall; floating glass corner' … 'but with high thermal mass and insulation to offset the glazing'	(+/-) TV-SE-OTC AGREEMENT, INSTRUCTION: 'Great, I want glass everywhere'	**F-AR: modern design solutions**	TV-SE-OTC-HEDO >> SD- Self-enjoyment, Views of the estate	
F-AR-DMi	IV-SE-CONS for TV-SE-CONS: Saving money IV-SE-OTC for TV-SE-CONS: Green agenda for personal (tax) benefits TV-SE/ST-OTC: Good design TV-SE-OTC-HEDO: Self-enjoyment, Views of the estate	SD DETAIL RECOMMENDATIONS + COST SAVINGS FR: "fit LEDs throughout the property, you're going to save yourself an absolute fortune because of the power [[low consumption]] of an LED…" SD DETAIL RECOMMENDATIONS+ COST SAVINGS FR: "...fit a decent [HE] boiler. Suddenly your energy performance SAP calcs are going to go through the roof, there's ways of being clever and not breaking the bank. Suddenly your energy performance SAP calcs are going to go through the roof."	(+) V-SE-CONS AGREEMENT, INSTRUCTION: 'OK, let's do the LEDs and the HE boiler too.'	Statutory Building Performance Failure F-AR: SD DETAIL Recommendations + COST SAVINGS; BENEFIT	IV-SE-CONS for TV-SE-CONS >> SD+ Saving money	
F-AR-CC1	TV-SE-OTC-HEDO: Self-enjoyment, Views of the estate TV-SE-CONS: Good design IV-SE-CONS for TV-SE-CONS: Saving money IV-SE-CONS: Getting the job done	CC1: STATUTORY BUILDING PERFORMANCE FAILURE: building control advises it doesn't perform: "ok… you go beyond 15 to 20% of glass you then have to get special calculations done; we had slightly too much glass; [LA] building control were going "uuh, it doesn't perform, blah blah blah.'" CC1 SOLUTION FR: BEND THE RULES: "...you get someone to do the thermal calcs for you and they'll pass almost anything for you. … you go Local Authority and they will bust your balls, they will make it hard for you. You'll get across the line, but you get there, but it's hard."	(-) TV-SE-OTC AGREEMENT, INSTRUCTION: '[Proceed with the] Energy Consultant.' "... they'll work their magic, and they'll pass the test." *AR-EVAL: "it's got this client […] a massive extension with loads of glass."*	F-AR: SOLUTION: BEND THE RULES: they'll pass almost anything for you.	IV-SE-CONS for TV-SE-CONS >> SD- Saving money	

Appendix 5.3 SS2 V-F-DM Construct Framework distilled from case-maps

v3

VARIABLES -- SEQUENCING -- EFFECTS

ANALYSIS

IN THIS *PHASE*	FOR THESE **CLIENT VALUES (V-CL)** *BASIC VALUE STATEMENT CLUSTER*	THESE **FRAMES (F-AR, F-CON…)** *FRAMES*	HAD THESE **EFFECTS ON D-M** (via F-CL) *OUTCOME: Green good for SD; Red bad for SD*	DECISION **TRIGGERS** *Act that sets in motion some course of events*	VALUES **DRIVERS** *WHICH VALUES are DRIVERS > SD++ OR SD–*	**PATTS+RELS**
F-AR-CC2	IV-SE-CONS: Getting the job done TV-SE-OTC-HEDO: Self-enjoyment, Views of the estate TV-SE-CONS: Good design IV-SE-CONS for TV-SE-CONS: Saving money	CC2 DESIGN FEATURE CONSTRUCTION PROBLEM: 'Aperture for sliding glass wall measured before roof was fully loaded, deflection 22mm not 5mm as SE dsgn'	(-) IV-SE-CONS for TV-SE-OTC>CONS AGREEMENT, INSTRUCTION: 'Proceed however necessary, just keep the glass'	F-AR: PROBLEM, BLAME, SOLUTION, RESULTS	TV-SE-OTC-HEDO >> SD- Self-enjoyment, Views of the estate	
		CC2 BLAME/ APPORTIONING RESPONSIBILITY: "That's SE responsibility because his calculations were wrong. We're finding the solutions, we're controlling it, we know whose fault it is."				
		CC2 SOLUTION FRAMES + PREDICTED RESULTS: 'Put in an extra column at the mullion line, you'll never notice…'				
AR16-CF-V2G5					**0.0%**	**4 / 1**
F-AR-DBr	**TV-SE-CONS: Conservation; Traditional Lifestyle** **TV-SE-CONS: Long-term connection; Comfortable retirement lifestyle** IV-SE-CONS: Adaptability for Usability **TV-SE-CONS: Future-proofing**	CONTEXT-SPECIFIC ENERGY DEMAND, PERFECT OPPORTUNITY: "Brilliant, swimming pool, energy demand, GSHP"	(-) TV-SE-CONS EARLY DISAGREEMENT; GSHP INSTRUCTION: "Nah, I don't want that."	F-CL Underground heat-pumps = low adaptability	IV-SE-CONS >> SD- Adaptability for Usability	
			[AR offended]; "fine… We won't do it."			
F-AR-DMi	IV-SE-CONS: Adaptability for **Usability** IV-SE-CONS: Longevity and Lifespan for **Usability** **TV-SE-CONS: Future-proofing** **TV-SE-CONS: Long-term connection; Comfortable retirement lifestyle**	TAR-BRUSH JUMPING TO CONCLUSIONS: "We straight away guess that she didn't want to go down the [full] green route"	(-) IV+TV-SE-CONS GOAL-ORIENTED REMINDER: 'CL wants adaptability for usability, not sustainability' "Her brief was about the adaptability of the building to make it usable for her. ... she wants to be there for the rest of her life. So, we have to put lifts in, and all the stuff that makes the building future-proofed."	F-CL Not user-friendly / easy-to-use	IV-SE-CONS Adaptability/Longevity/Lifespan for Usability TV-SE-CONS >> SD- Conservation; Traditional Lifestyle Bloody-mindedness / disinterest in SD	
		EXPLAINED SD OPTIONS IN TECHNICAL TERMS: 'spending, replacing, thicknesses, Conservation implications, thermal performance'; technical descriptions (see AR16-E087; -E084; -E083) (unclear precisely which options)				
		SD REFRAMING as PROGRESSIVE/LIBERAL or CONSERVATIVE: "Bernie Sanders or Donald Trump – where do you want to go?"				
F-AR-CC1	**TV-SE-CONS: Saving Money** IV-SE-CONS: Adaptability for **Usability** IV-SE-CONS: Longevity and Lifespan for **Usability** **TV-SE-CONS: Future-proofing** **TV-SE-CONS: Long-term connection; Comfortable retirement lifestyle**	PRE-JUDGEMENT WITH TECHNICAL DESCRIPTIONS FOR EXISTING WINDOWS: 'spending on replacing, tiny upgrade in thermal performance (exaggerated value); leave breathable timber sash windows, insulate the curtains'	**(-/+) TV+IV-SE-CONS AGREEMENT; INSTRUCTION:** 'Complete agreement; leave the windows, insulate the curtains; LEDs, HE boiler, clever spending…'	F-AR: Clever spending / cost savings	TV-SE-CONS >> SD- Saving Money	
		SD DETAILED RECOMMENDATIONS FOR ALTERNATIVES, ADD-ONS + SAVINGS: "leave the windows as single glazed and put in a decent boiler, put in LED lights, put in other little subtle things in areas… Straightaway you've saved £40-50,000 on windows, spend the money more cleverly."				
		CLEVER SPENDING FR: "it's just the whole process of [[deciding]] where are you going to spend your money?"	**(-) CHANGE ORDER / VARIATION:** MOVE EXTENSION 5m (for better views)	F-CL: Better views / bloody-mindedness	TV-SE-CONS >> SD- Long-term connection; Comfortable retirement lifestyle	
F-AR-CC2	**TV-SE-CONS: Long-term connection; Comfortable retirement lifestyle** IV-SE-CONS: Adaptability for **Usability** IV-SE-CONS: Longevity and Lifespan for Usability IV-SE-CONS: Future-proofing **TV-SE-CONS: Conservation; Traditional Lifestyle** IV-SE-CONS: Cost control (saving money/ loss prevention) **TV-SE-CONS: Saving Money**	COST, PROGRAMME, IMPLICATIONS of BIG CHANGE; 'Suggested process for handling such a significant change: cost implications, communication channels, design implications, programme effects, (neg) evaluation; issue AI'	**(-) TV-SE-CONS DISAGREEMENT; INSTRUCTION:** 'Changed her mind, went ahead with the change.' "And ideally, I will want the cost from the contractor back as soon as possible, added to the cost and then put into the project figures [cost plan]."	F-CL: Better views / bloody-mindedness	TV-SE-CONS >> SD- Long-term connection; Comfortable retirement lifestyle	
		CONTRACTOR COST IMPLICATIONS & 'RIGHT DECISION' FR: "Contractor will charge you for it, irrespective of whether it's the right decision or not"				

Appendix 5.3 SS2 V-F-DM Construct Framework distilled from case-maps

v3

VARIABLES -- SEQUENCING -- EFFECTS				ANALYSIS		
IN THIS	FOR THESE **CLIENT VALUES (V-CL)**	THESE **FRAMES (F-AR, F-CON…)**	HAD THESE **EFFECTS ON D-M** (via F-CL)	DECISION **TRIGGERS**	VALUES **DRIVERS**	**PATTS+RELS**
PHASE	***BASIC VALUE STATEMENT CLUSTER***	***FRAMES***	***OUTCOME:*** *Green good for SD; Red bad for SD*	*Act that sets in motion some course of events*	***WHICH VALUES are DRIVERS > SD++ OR SD–***	
AR13						**75%**
AR13-CF-BPFF1					**85.7%**	**1 / 6**
F-AR-DBr	**TV-ST-BENEV+SEC: Mobility** (via courtyard living) **TV-ST-BENEV: Family Values, Togetherness** **TV-ST+SE-UNIV+SEC: Connection and Access to Nature** **TV-ST-UNIV+SEC: Sustainability and Well-being**	**CHALLENGES, CONSTRAINTS+ IMPLICATIONS; RECOMMEND APPROACH: Difficult planning:** *'Recommend you consider PassivHaus, can't build in AONB; Will need to be Para 55 Exceptional design'* **SD APPROACH: PASSIVHAUS** *'appropriate, location-based applications of PassivHaus principles'* **SD APPROACH: INNOVATION** *'Para55 house needs innovation."pushing the boundaries," trust, respect'* **SD CONCEPT:** *'Provide an 'innovative response' under NPPF Para55 special circumstances: Year-round courtyard design'*	**(+) TV-ST-ALL AGREEMENT, INSTRUCTION+ CAVEAT:** *They agreed, but "they don't want to be in a sealed box; they want to live in a courtyard"*	**Unique situation + SITE, PARA55** + AR framing strategy: CHALLENGES, CONSTRAINTS + IMPLICATIONS; APPROACH; CONCEPT; tangibles + intangibles…	TV-ST-BENEV+SEC: Mobility (via courtyard living) TV-ST-BENEV: Family Values, Togetherness TV-ST+SE-UNIV+SEC: Connection and Access to Nature	Possible SD was forced on CL by planning?
F-AR-DMi	**TV-ST-UNIV+SEC: Sustainability and Well-being** **TV-ST+SE-UNIV+SEC: Connection and Access to Nature** **TV-ST-BENEV+SEC: Mobility** (via courtyard living)	**SD CONCEPT/PRINCIPLES ELABORATION:** *'Low-lying & highly sustainable, get M&E right at design stage'* **SD CONCEPT APPROACH & IMPLICATIONS:** *"I spent a lot of time explaining PassivHaus, implications"*	**(+) TV-ST+SE-UNIV+SEC AGREEMENT, RFI / SD SUGGESTION/REQUEST:** *'They were OK with passive house principles; Asked: What about using GSHP?'*	F-AR STRAT: Principles elaboration and implications	TV-ST-UNIV+SEC >> SD++ Sustainability	Possible underlying drivers were also family, mobility, security.
F-AR-DMi	**TV-ST-UNIV+SEC: Sustainability and Well-being** **TV-ST+SE-UNIV+SEC: Connection and Access to Nature** IV-SE-SEC for TV-SE+CONS-SEC: Technical Performance for Quality of Life	**SD MEASURES RECOMMENDATIONS + EXPLANATIONS:** *'Natural Ventilation + Air Tightness for Controlled Ventilation'* **SD MEASURES RECOMMENDATIONS:** *'go Off-Grid: Could easily have a large area of solar PVs, c140 sqm'* **SD MEASURES:** *'scheme sent for performance model'* **SD DETAIL MEASURES: Boiler type and use patterns**: *'M&E system also depends on what sort of boiler you'd have and how much you'd want to use it'*	**(+) TV-ST+SE-UNIV+SEC AGREEMENT, INSTRUCTION:** *'They went for off-grid / PVs, and controlled NAT.vent, openable windows...'* **(/) V-F RESPONSE w/RESERVATIONS**: *'unsure about boiler; it's used mornings, evenings, and throughout day, mainly for washing up and teas; sometimes baths.'*	F-AR STRAT: SD MEASURES RECOMMENDATIONS + EXPLANATIONS	TV-ST-UNIV+SEC >> SD++ Sustainability TV-ST+SE-UNIV+SEC Connection and Access to Nature	
F-AR-CC1	**TV-ST+SE-UNIV+SEC: Connection and Access to Nature** **TV-ST-UNIV+SEC: Sustainability and Well-being** **TV-ST-BENEV+SEC: Mobility** (via courtyard living) IV-SE-SEC for TV-SE+CONS-SEC:Technical Performance for Quality of Life **TV-ST-BENEV: Family Values, Togetherness**	**CC1: SD COORD., COURTYARD SOLAR DESIGN:** *'Solar Design, asked M&E Consultants: 'can't react without a design', can't have a debate"* **SD DESIGN DEVELOPMENT:** *'asked M&E-CONS: solar shading the Courtyard, do we need canopy or not?'* **M&E CONSULTANTS LIMITATIONS:** *"We've reached M&E designers' limitations; Except for Fulcrum, they're all reactive systems designers, not concept designers"* **SD SOLUTIONS:** *"Even with a model they couldn't tell me exactly." "Alternative approach: retractable pergola, large eaves overhangs and deep window reveals'*	**(+) TV-ST+SE-ALL AGREEMENT, INSTRUCTION:** *'They agreed to proceed with the alternative, and wanted to retain the intimate courtyard garden as open-air.'*	F-AR: M&E designers' limitations	TV-ST+SE-UNIV+SEC >> SD++ Connection and Access to Nature	
F-AR-CC2	**TV-ST-UNIV+SEC: Sustainability** (and Energy Performance) **TV-ST+SE-UNIV+SEC: Connection and Access to Nature** **TV-ST-BENEV+SEC: Mobility** (via courtyard living) IV-SE-SEC for TV-SE+CONS-SEC:Technical Performance for Quality of Life IV-SE-CONS-SEC: Reasonable Running Costs	**CC2: TECHNICAL DELIVERY CHALLENGE, GSHP & O/A ENERGY PERFORMANCE GOALS:** *'So I explained GSHP, depends on the right soil conditions…'* **RENEWABLES Evaluation, justification, possible alternatives**: *'GSHP is mechanical; questionable efficiency 1:4-1:2; running/maintaining pumps, cost ...better to have more PVs, or ... put a wind turbine up?"* **RENEWABLES GOALS:** *'We are pursuing FABRIC ENERGY PERFORMANCE; whereas the M&E-CONS is pursuing OVERALL ENERGY PERFORMANCE'*	**(+) TV-ST+SE-ALL AGREEMENT, INSTRUCTION + JUSTIFICATION:** *'They went for the GSHP with underfloor heating and the PV; appreciated the efforts on performance, helps keep down running costs'*	F-AR: RENEWABLES and OVERALL ENERGY PERFORMANCE	TV-ST-UNIV+SEC >> SD++ Sustainability (and overall energy performance)	
F-AR-CC3	**TV-ST-UNIV+SEC: Sustainability** (and Energy Performance) **TV-ST+SE-UNIV+SEC: Connection and Access to Nature** **TV-ST-BENEV+SEC: Mobility** (via courtyard living) IV-SE-SEC for TV-SE+CONS-SEC: Technical Performance for Quality of Life IV-SE-CONS-SEC: Reasonable Running Costs **TV-ST-BENEV: Family Values, Togetherness**	**CC3: TECHNICAL DELIVERY CHALLENGE, AIR-TIGHTNESS:** *'Meeting PassivHaus air-tightness criteria with a courtyard house that's not a sealed box'* **ENERGY PERFORMANCE CONSTRAINTS AND MEASURES:** *"right insulation, right u-values, change [orientation], but planning context to [orientation], so room for manoeuvre is quite small.""* **PROVING ENERGY PERFORMANCE:** *"I want to prove—to prove for the Para55—that we can meet the PassivHaus standards achieve OVERALL ENERGY PERFORMANCE… but by [those] other ways"*	**(+) TV-ST+SE-ALL AGREEMENT, INSTRUCTION:** *'They agreed and we took that scheme to planning'* *RESULT: PLANNING GRANTED*	F-AR: TECHNICAL DELIVERY CHALLENGE, AIR-TIGHTNESS	TV-ST-UNIV+SEC >> SD++ Sustainability (and overall energy performance)	

Appendix 5.3 SS2 V-F-DM Construct Framework distilled from case-maps

v3

VARIABLES -- SEQUENCING -- EFFECTS				ANALYSIS		
IN THIS	FOR THESE **CLIENT VALUES (V-CL)**	THESE **FRAMES (F-AR, F-CON…)**	HAD THESE **EFFECTS ON D-M** (via F-CL)	DECISION **TRIGGERS**	VALUES **DRIVERS**	**PATTS+RELS**
PHASE	***BASIC VALUE STATEMENT CLUSTER***	***FRAMES***	***OUTCOME:*** ***Green good for SD;*** ***Red bad for SD***	*Act that sets in motion some course of events*	***WHICH VALUES are DRIVERS > SD++ OR SD–***	
AR13-CF-HHE4					**83.3%**	**1 / 5**
F-AR-DBr	IV-SE/CONS-ACHIEVE/POW/SEC: Securing Planning Consent **TV/IV-SE-OTC+CONS: Creating a Dream Family Home** **TV-ST-UNIV-NATURE: Naturalistic Experience, Connection to Nature** **TV-ST-OTC/CONS: Sustainability & Sustainable Energy** **TV-ST-OTC/CONS: Sustainable Lifestyle**	**PLANNING CONTEXT RE: SENSITIVE SITE**: *"There was a planning issue… [the site was considered to be a Greenfield and not within a developable area]"…* **PLANNING CONTEXT IMPLICATIONS:** *"[The planning had to be made under the very onerous PPS7 rural exception policy]"… and there are "[demands imposed by the principles of zero carbon emissions]"*	**(+) CLARIFICATION PROJECT FEASIBILITY / VIABILITY:** *'OK [with PPS7], is it possible to get a planning consent?'*	F-AR: SITE AND PLANNING CONTEXT IMPLICATIONS	TV/IV-SE-OTC+CONS >> SD++ Creating a Dream Family Home	
F-AR-DBr	IV-SE/CONS-ACHIEVE/POW/SEC: Securing Planning Consent **TV/IV-SE-OTC+CONS: Creating a Dream Family Home** **TV-ST-UNIV-NATURE: Naturalistic Experience, Connection to Nature** **TV-ST-OTC/CONS: Sustainability & Sustainable Energy** **TV-ST-OTC/CONS: Sustainable Lifestyle**	**DGN+SD APPROACH, RECOMMENDATIONS:** *'This means creating "[an exemplary and outstanding piece of design] … to [create a sequence of organic spaces and forms brought together by a unifying curved wall]" .. With flat, green roof, PV cells, and wind turbine.'* **SD MEASURES IMPLICATIONS: PV HEIGHT ISSUE:** *"[but] when you've got both [PVs and Green Roof], you need to have air and space between them…"*	**(+) MUTUAL AGREEMENT, DECISION FR: NEED TO GET PLANNING:** *"We came to a joint decision—to get planning, one or other would have to go … it was entirely to do with securing a planning consent" [PV's remained]*	F-AR either-or PV vs. Green roof for planning	TV/IV-SE-OTC+CONS >> SD++ Creating a Dream Family Home	
F-AR-CC1	IV/TV-ST-UNIV/BENEV/CONFORM: Avoiding Community Discord IV-SE/CONS-ACHIEVE/POW/SEC: Securing Planning Consent **TV/IV-SE-OTC+CONS: Creating a Dream Family Home** **TV-ST-UNIV-NATURE: Naturalistic Experience, Connection to Nature** **TV-ST-OTC/CONS: Sustainability & Sustainable Energy** **TV-ST-OTC/CONS: Sustainable Lifestyle**	**CC1: COMMUNITY'S TURBINE OBJECTIONS + IMPLICATIONS re: visibility & noise on sensitive site;** *"You see, we're not the only parties in this. You put a turbine on almost any site and there's uproar... this was a sensitive site"*	**(+/-) MUTUAL AGREEMENT, DECISION FR: NEED TO GET PLANNING:** *'Take the turbines off, put more PVs'*	F-COMM: objection to turbines	IV-SE/CONS-ACHIEVE/POW/SEC Securing Planning Consent TV/IV-SE-OTC+CONS >> SD/ Creating a Dream Family Home	
F-AR-CC2	IV/TV-ST-UNIV/BENEV/CONFORM: Avoiding Community Discord IV-SE/CONS-ACHIEVE/POW/SEC: Securing Planning Consent **TV/IV-SE-OTC+CONS: Creating a Dream Family Home** **TV-ST-UNIV-NATURE: Naturalistic Experience, Connection to Nature** **TV-ST-OTC/CONS: Sustainability & Sustainable Energy** **TV-ST-OTC/CONS: Sustainable Lifestyle**	**CC2: COMMUNITY'S FLAT ROOF OBJECTIONS re: traditional pitched tile-hung roofs, no visible PVs**: *"we wanted a flat roof, whereas the community wanted pitched roofs, but pitched roofs make it much higher, etc., and if* **SD MEASURES IMPLICATIONS:** *"[but] there was a planning [visibility] issue with the height of the roof and PV's, so in the end you could have one or the other."* **SD MEASURES RECOMMENDATIONS + IMPLICATIONS:** *"The way to get PVs was actually to hide them; they're not quite as efficient flat, ...its not as much*	**(+/-) AGREEMENT, DECISION FR:** *'proceed with PVs at a low-angle on the flat roof; accept the efficiency loss'* *PLANNING CONSENT GRANTED*	F-COMM: objection to flat roofs and visible PV's	IV-SE/CONS-ACHIEVE/POW/SEC Securing Planning Consent TV/IV-SE-OTC+CONS >> SD+ Creating a Dream Family Home	
F-AR-CC3	**TV-SE-CONS: Cost Savings / Saving Money** **TV/IV-SE-OTC+CONS: Creating a Dream Family Home** **TV-ST-UNIV-NATURE: Naturalistic Experience, Connection to Nature**	**CC3: AR LATER CHALLENGE TO CL DM**: *"What about if we put a green roof on the garage because there was no PV there?"*	**(+) AGREEMENT, DECISION FR:** *"The client promised me that he would put a green roof on the garage because there was no PV there."* **(-) DISAGREEMENT, DECISION FR: GREEN ROOF TOO COSTLY** *"But when it came to it, he didn't put them on, and I said 'what about that' and … he grumbled 'ah, well, its costly and… So at that stage, the cost has come in more'."*	**VCL: COST / SAVING MONEY**	TV-SE-CONS >> SD- Cost Savings / Saving Money TV/IV-SE-OTC+CONS Creating a Dream Family Home	
AR13-CF-SQH5 (HMH5)					**55.6%**	**3 / 1 / 5**
F-AR-DBr	IV-SE-Achievemt: Investigating Possibilities, Potential (benefit) **TV-ST/SE-UNIV/NAT+CONS/SEC: Pragmatic Sustainability** **TV-SE-CONS/SEC: Cost-effectiveness** **TV-ST/SE-CONS/SEC: Future-Proofed; Lifespan**	**BOUNDARY-SETTING: REGULATORY LIMTATIONS PF**: *"...of course you want to get as green as possible, but within the parameters of what the state—the STATE—will allow you… which is fairly limited."*	**(+/-) TV-ST/SE REINFORCEMENT + CLARIFICATION-SEEKING:** *We want GSHP, but 'heard GSHP not functioning properly, not cost-effective' 'ASHP is more popular, cheaper, cost-effective'* **(+/-) TV-ST/SE REINFORCEMENT + CLARIFICATION-SEEKING:** *Heard "PVs lose their effect over a period of time."*	F-AR Cautious optimism	IV-SE-Achievemt >> SD+ Investigating Possibilities, Potential (benefit) TV-ST/SE-CONS/SEC Future-Proofed; Lifespan	
F-AR-DMi	**TV-ST+SE: Trust** **TV-SE-CONS/SEC: Cost-effectiveness [value-for-money?]** **TV-ST/SE-CONS/SEC: Future-Proofed; Lifespan** **TV-ST/SE-UNIV/NAT+CONS/SEC: Pragmatic Sustainability** IV-SE-Achievemt: Investigating Possibilities, Potential (benefit)	**SD JUSTIFICATION: ALWAYS BAD STORIES:** *"You'll always hear bad stories"; 'Disagree: GSHP better, but not done cheaply; right conditions and right installer'* **PVs JUSTIFICATION, PERFORMANCE v DETERIORATION:** *"if you don't clean them, the performance will go down dramatically." "25% deterioration over 25 years, already built into calcs.'* **NAT. GOVT. UNSUPPORTIVE:** *'Government loss of credibility unhelpful in contributing to climate of disinterest, distrust [in renewables].'*	**(+) TV-ST AGREEMENT, DECISION:** *'CL trusts AR's views, technically feasible, go for large array of PVs; investigate costs of ASHP.'* **(+/-) TV-SE JUSTIFICATION:** Balancing cashflow & CapEX w/ lifespan interests: *"... its partly about cash flow and how much they can spend up-front, but also, they do have an eye to lifespan"* **(+/-) IV+TV-SE JUSTIFICATION:** "THEORETICAL SUSTAINABILITIES: *"[they'll] go along with a certain amount up to planning, because they think that helps them secure planning."*	F-AR PVs JUSTIFICATION, PERFORMANCE v DETERIORATION	TV-SE-CONS/SEC >> SD+ Cost-effectiveness [value-for-money?] TV-ST/SE-CONS/SEC Future-Proofed; Lifespan	

Appendix 5.3 SS2 V-F-DM Construct Framework distilled from case-maps

v3

VARIABLES -- SEQUENCING -- EFFECTS

ANALYSIS

IN THIS PHASE	FOR THESE CLIENT VALUES (V-CL) BASIC VALUE STATEMENT CLUSTER	THESE FRAMES (F-AR, F-CON…) FRAMES	HAD THESE EFFECTS ON D-M (via F-CL) OUTCOME: Green good for SD; Red bad for SD	DECISION TRIGGERS Act that sets in motion some course of events	VALUES DRIVERS WHICH VALUES are DRIVERS > SD++ OR SD–	PATTS+RELS
F-AR-CC1	IV-SE-CONS+SEC/PERS for IV-SE: Balancing Budget for Completion (Risk-Avoidance) **TV-SE-CONS/SEC: Cost-effectiveness; Saving Money [value-for-money?]** IV-SE-Achievemt: Investigating Possibilities, Potential (benefit) **TV-ST+SE: Trust** **TV-ST/SE-CONS/SEC: Future-Proofed; Lifespan** **TV-ST/SE-UNIV/NAT+CONS/SEC: Pragmatic Sustainability**	**CL COST CHALLENGE:** *'£1m budget, £1.3 tenders'* **SD APPROACH-RECALIBRATION:** *'**FABRIC FIRST APPROACH** permits later addition of "true renewables"; Facilitated by continuing technology price reductions'* **SD DM TACTICS, DELAY DECISION:** *"You try and keep the client on board as long as possible… if you're losing it at the tender stage, no time left to manoeuvre."*	(-) **IV/TV-SE DECISION-QUERY:** *"Can we consider removing PVs after planning?"* (-) **IV-SE RISK-AVOIDANCE:** *" 'They haven't got that money, they're not going to do it.' So, there's no point in antagonising them particularly by saying, 'well, you've really got to do it' when it's not reinforced [by them]."* *AR13 COMPETENCE/fulfilling duties by raising all SUST points by DM: "we would not be doing our job if we didn't discuss all these things"*	F-QS: COST CHALLENGE: high tenders	IV-SE-CONS+SEC/PERS for IV-SE >> SD- Balancing Budget for Completion (Risk-Avoidance) TV-SE-CONS/SEC Cost-effectiveness; Saving Money [value-for-money?]	IV for IV for TV?
F-AR-CC2	IV-SE-CONS+SEC/PERS for IV-SE: Balancing Budget for Completion (Risk-Avoidance) **TV-SE-CONS/SEC: Cost-effectiveness; Saving Money [value-for-money?]** IV-SE-Achievemt: Investigating Possibilities, Potential (benefit) **TV-ST+SE: Trust** **TV-ST/SE-CONS/SEC: Future-Proofed; Lifespan** **TV-ST/SE-UNIV/NAT+CONS/SEC: Pragmatic Sustainability**	**PLANNING+FINANCIAL CC-VFR; JUSTIFICATIONS TO RETAIN:** *'Changing a planning condition costs more, 5-year PV payback, "better to just get on with it", make fabric efficient, decide on renewables latest possible* **SD APPROACH-APPLICATION: FABRIC+ENERGY:** *highly efficient fabric reduces energy reliance and means less renewables* **SD DM JUSTIFICATION:** ***Speed of technological change** favours decision delay re: efficiencies+ alternatives/ new future technologies; opportunities for more persuasion* **OFFSETTING PV LOSS ELSEWHERE?** *"the problem with that is that if you're concentrating on the fabric, where are those savings? Area is the most expensive thing... If you bring the area down, you save money."*	(+) **TV-ST AGREEMENT, DECISION:** *'Keep the highly-efficient fabric; Keep PVs, but...'* (-) **IV+TV-ST DECISION, JUSTIFICATION:** *'Procure as D&B to save costs; reduce to smaller PV array'* *"Renewables are always the first to go"* Self fulfilling prophecy, or statement of fact based on experience?	AR's challenge to CL to retain measures	IV-SE-CONS+SEC/PERS for IV-SE >> SD- Balancing Budget for Completion (Risk-Avoidance) TV-SE-CONS/SEC Cost-effectiveness; Saving Money [value-for-money?]	
AR11						**32%**
AR11-CF-PSB1					**46.7%**	**3 / 5 / 7**
F-AR-DBr	TV-ST-UNIV+BENEV: Modern, Inclusive, Sustainable Facilities (Estates Mgr) IV-CONS-CONFORM + SE-ACHIEVE Meeting Targets; Getting it Built, On Time, On Budget (PM) TV-SE-ACHIEVE: Sporting Excellence (Head of Sport) TV-ST-BENEV-CARE + ST-UNIV-CONCERN Providing a Great Student Experience (Student President) TV-ST-BENEV-DEPEND: Providing Excellent Service & Variety (Catering Mgr)	**CLEAR BRIEF DEVELOPMENT & CONFIRMATION:** *"We've been given a brief, which clearly set out BREEAM, what was required. We'd been given a brief as to spatially what they wanted, they want this space, they want this, they want that…"* **CAPABILITY & DELIVERY CERTAINTY:** *"When I first looked at it, I thought BREEAM excellent, I'm sure we'll be able to do that."* **NEEDS TO PROGRESS:** APPRECIATING ENGAGEMENT for CLARITY: *"We'd had lots of user group meetings beforehand, early on in the process…*	**USER GROUP FEEDBACK:** (+) **TV-SE-ACHIEVE ESTATES PM: TARGETS & GOALS EXPLANATION:** *"The University have a Carbon Management Plan, and that sets out targets, goals. …part of their funding relies on them achieving those goals, [to] achieve BREEAM Excellent.* (/) **TV-SE-ACHIEVE Feedback, HEAD OF SPORTS:** *"…Head of Sports come in and said we have a bunch of teams here, we need this, we need this…"* [i.e. clubhouse, changing, showers for 4 teams with two sides]. (/) **TV-ST-BENEV-CARE Feedback, STUDENT UNION:** *"[We had] the head of Student Union coming in to talk about it."* [i.e. Union uses, spatial and equipment needs, etc… union shop…]. (/) **TV-ST-BENEV-DEPEND Feedback, CATERING:** *"So the kitchen, we had their Catering Manager coming, talk about what they required…"* [i.e. spatial and equipment requirements, etc… kitchen, catering facilities…].	F-USERS: User group meetings to confirm Brief	TV-ST-UNIV+BENEV >> SD++ Modern, Inclusive, Sustainable Facilities (Estates Mgr) IV-CONS-CONFORM + SE-ACHIEVE Meeting Targets; Getting it Built, On Time, On Budget (PM)	AR was almost completely reactive throughout, with little proactivity
F-AR-DMi	IV-CONS-CONFORM + SE-ACHIEVE: Meeting Targets; Getting it Built, On Time, On Budget (PM) TV-ST-UNIV+BENEV: Modern, Inclusive, Sustainable Facilities (Estates Mgr)	**LOW BASELINE:** *"…it was a little sports pavilion. Keep the players dry, somewhere to have a shower, […] but it was to replace some Port-a-cabins, so anything's going to be better than port-a-cabins."* **BREEAM, TRICKY DELIVERY:** *"…when I started to investigate [BREEAM] more, I was thinking, this is tricky…"* [that's £400-grand worth of sustainability kit]	(-) **IV-SE-ACHIEVE CMP NEGATIVE Feedback, ESTATES PM:** *"Their project manager, Head of Estates… Now he didn't like it – the Carbon Management Plan document – so he's on the client's behalf, he has to implement it!"* (+) **TV-SE-ACHIEVE PM INSTRUCTION RE: BREEAM:** *"they were [wanting to be] using not the combi-boilers – they do combined heat and power, CHP units."*	F-AR: BREEAM MEANS TRICKY DELIVERY F-CL: CMP NEGATIVE Feedback i.e. neither liked or wanted it...	IV-CONS-CONFORM + SE-ACHIEVE >> SD+ Meeting Targets; Getting it Built, On Time, On Budget (PM)	
F-AR-DMi	IV-CONS-CONFORM + SE-ACHIEVE: Meeting Targets; Getting it Built, On Time, On Budget (PM) TV-ST-UNIV+BENEV: Modern, Inclusive, Sustainable Facilities (Estates Mgr)	**NEED TO INVESTIGATE FOR GREATER CLARITY:** *"CHP units, again I've heard of those, so then you start to think, "well, I better do a bit of research"… what do they* **GREEN ROOF REQUIREMENT & POPULARITY JUSTIFICATION:** *"Green roofs… It was a requirement of someone – BREEAM – we'll put a green roof. 'Everyone is doing it, come on, you must have a green roof. Yeah…* **DISCOMFORT IN LACK OF KNOWLEDGE:** *"Sometimes you're introducing stuff to a client, and then you're thinking, …How much do I really know about this?!?';"*	(+/-) **IV-CONS-CONFORM + SE-ACHIEVE + CONS-SEC. PM: BREEAM problematic in practice:** *"BREEAM has developed, [and] because the buildings have got more advanced--I suppose as time has gone on--they've had various problems as they're going on. As I understand, some [projects] have been more successful than others. […But] part of their funding relies on them achieving those BREEAM/carbon goals."* (+) **IV-SE-ACHIEVE INSTRUCTION:** *"Green roof… Okay, yeah..."*	F-AR NEED TO INVESTIGATE FOR GREATER CLARITY	IV-CONS-CONFORM + SE-ACHIEVE >> SD+ Meeting Targets; Getting it Built, On Time, On Budget (PM)	

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v3

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IN THIS PHASE	FOR THESE CLIENT VALUES (V-CL) BASIC VALUE STATEMENT CLUSTER	THESE FRAMES (F-AR, F-CON…) FRAMES	HAD THESE EFFECTS ON D-M (via F-CL) OUTCOME: Green good for SD; Red bad for SD	DECISION TRIGGERS Act that sets in motion some course of events	VALUES DRIVERS WHICH VALUES are DRIVERS > SD++ OR SD–	PATTS+RELS
F-AR-CC1	*IV-SE-ACHIEVE + CONS-SEC: Getting the Best Project for the Budget (PM)*	**CC1 TENDER RETURNS WAY OVER BUDGET:** *"The budget that was established for it, the realistic construction budget set in the brief, was only £400,000. And the tender at about £1.8 million."*	(+/-) **IV-SE-ACHIEVE + CONS-SEC PM DECISION TO REDUCE AREA but KEEP BASIC FUNCTIONS**: *"We had to reduce the area... So we [aren't going to] achieve what the original [design] had, because the original one had a clubhouse, which we didn't include; and the catering facility … didn't happen."*	F-QS: TENDER RETURNS WAY OVER BUDGET	IV-SE-ACHIEVE + CONS-SEC >> SD Getting the Best Project for the Budget (PM)	IV for TV-New facilities?
	IV-CONS-CONFORM + SE-ACHIEVE: Meeting Targets; Getting it Built On Time, On Budget (PM)	**DISJOINTED CLIENT REQMTS:** Client's Carbon Management targets & spatial requirements beyond original cost plans: *"Where it's not joined up, the building I*		CL UNREALISTIC GOALS & BUDGET	IV-CONS-CONFORM + SE-ACHIEVE Meeting Targets; Getting it Built, On Time, On Budget (PM)	
	***Modern, Inclusive** (Sustainable) **Facilities** (PM)*	**JUDGEMENT re UNREALISTIC GOALS**: *"From cabins to a BREEAM excellent building, with an unrealistic budget, you know, that's what I found a bit strange ..."*				
F-AR-CC2	*Meeting Targets; Getting it Built On Time, On Budget (PM)*	**CC2 RESCUE BREEAM PROBLEMS**: *"the project was on site and we run into problems and we try to somehow rescue, achieve, get BREEAM points to achieve the BREEAM excellent."*	(+/-) **IV-SE-ACHIEVE + CONS-SEC PM ESTATES SUGGEST BRING IN OWN SUST REPS**: *Late SH-Engagement on SD to deal with a problem, rather than being brought in early doors…*	F-AR: Problem achieving BREEAM points	IV-CONS-CONFORM + SE-ACHIEVE >> SD+ Meeting Targets; Getting it Built, On Time, On Budget (PM)	IV for TV-New facilities?
	Getting the Best Project for the Budget (PM)		(+) **TV-ST-BENEV-DEPEND + UNIV-NATURE+SEC SD: SUGGESTIONS FOR WASTEWATER HEAT RECOVERY (WWHR)**: *"what they were suggesting […] Lots of showers, hot water, goes down the drain, you take the heat from it and you recycle the heat.*		IV-SE-ACHIEVE + CONS-SEC Getting the Best Project for the Budget (PM)	
	Involvement for Helpfulness, for Sustainability (SD)					
	***Modern, Inclusive** (Sustainable) **Facilities** (PM)*					
F-AR-CC3	*IV-SE-ACHIEVE + CONS-SEC: Getting it Right; Learning from Mistakes; Avoid Duplicating Problems (PM)*	**CC3 LATE SH-ENGAGEMENT** *"Now they came out with this – that was their suggestion. Why on earth wasn't that introduced early doors?!? Now maybe they didn't know, maybe they were struggling to find out what, you know, technologies; but why not any feedback, or things they'd*	(/-) **TV-SE-ACHIEVE + CONS-SEC LATE CLIENT ENGAGEMENT: HEAT PUMPS A MAINTENANCE PROBLEM:** *'wwaaah, we don't want to be using that, ...we'll have nightmares with them!'."*	F-CL: LATE CLIENT ENGAGEMENT on heat pumps and green roof experiences	IV-SE-ACHIEVE + CONS-SEC >> SD- Getting it Right; Learning from Mistakes; Avoid Duplicating Problems (PM)	IV for TV-New facilities?
	Meeting Targets; Getting it Built On Time, On Budget (PM)		(/) **TV-SE-ACHIEVE + CONS-SEC LATE CLIENT ENGAGEMENT: CL SHARES MASSIVE PROBLEM WITH GREEN ROOF ON ANOTHER PROJECT:** *"Let's talk about green roofs… D&B contractor, put the green roof on [an adjoining project] , one weekend after the building was in use, the green roof blew off and landed on the carpark next-door!"*			
	Getting the Best Project for the Budget (PM)	**INCREASING FAMILIARITY re TECHNICALITIES**: Green Roof, CHP units, Wastewater Heat Recovery (WWHR)... *"[e.g.] it's only recently I've really begun to understand [green roofs], quite how they work, how they drain, how they're built-up, and the different types…"*				
	***Modern, Inclusive** (Sustainable) **Facilities** (PM)*					
F-AR-CC4	*Getting it Right; Learning from Mistakes; Avoid Duplicating Problems (PM)*	**CC4 CL PREVIOUS EXPERIENCE > AR11 KNOWLEDGE INCREASE; TECHNICAL CRITERIA:** *"So, you know that was a mat, that was a green mat, it's still green roof. So there's a green roof which is that thick [abt. 350 mm], and is a green roof which is that or that, and you*	(/-) **CL PROBLEM: CHP VAST COST FOR REPAIR, NOT YOUR AVERAGE PLUMBER:** *"A CHP unit, every time they got someone out to repair it, it'd be a vast cost […] because it's not your normal plumber. […] I can get someone to do it, but are they going to do a good job?"*	F-CL: LATE CLIENT ENGAGEMENT on CHP repair	IV-SE-ACHIEVE + CONS-SEC >> SD- Getting it Right; Learning from Mistakes; Avoid Duplicating Problems (PM)	IV for TV-New facilities?
	Meeting Targets; Getting it Built On Time, On Budget (PM)	**CONCERNED AND UNSURE:** Massive problem scares AR11 to check his specification: *"Then you think, shit, I've got to go back and read up about these, what have I specified here? As far as I know I specified a green roof… Have I specified the ones that blow off? Shit! Have I specified a green wig?!?"*	***OUTCOME**: Post-occupancy Evaluation (POE) reports indicate CHP units were installed but switched off and never used, likely to gain BREEAM points; Correct green roof was used (gain BREEAM points); Achieved BREEAM Very Good instead of Excellent; Vending machines installed instead of catering, Multi-functional space adopted instead of Clubhouse.* *Unclear if WWHR was used*			
	Getting the Best Project for the Budget (PM) *Modern, Inclusive (Sustainable) Facilities (PM)*	**DISPARAGING SD JUDGEMENT:** *"What we had was 'a little sports pavilion'; now it's got all these other things, not some high-tech, gizmo-led, wow!"*				
AR11-CF-OCRS3					**22.2%**	**4 / 3 / 2**
F-AR-DBr	*IV-CONS-CONFORM: Fulfilling Statutory Requirements*	**SD FACTORS TO CONSIDER**: *"[In terms of sustainability, there was] the restaurant, as well as requiring more in terms of thoughts about energy, it also by its nature*	(-) **IV-CONS-CONFORM INSTRUCTION; LOWER BOUNDARY DEFINITION:** *"... they didn't know [about sustainability / how sustainable they wanted to be], and all they wanted to do was meet the regulations. 'We need to--we just want to--meet the regulations. Do the littlest amount to make sure we pass'."*	F-AR HANDS-ON SD MANAGEMENT APPROACH	IV-CONS-CONFORM >> SD minimums Fulfilling Statutory Requirements	IV for TV-Providing welcoming estates?
	Trusting Our Advisors					
	Providing Welcoming Estates	**SD ENERGY EFFICIENCY REGULATIONS**: *"[Also] there were different regulations for energy efficiency [for the*				
	Clarity; Becoming & Being "Clear"	**SD MANAGEMENT APPROACH; HANDS-ON**: *"... in terms of sustainability, we were having to lead them in terms of what they had to provide."*	(-) **IV-CONS-CONFORM JUSTIFICATION; AGREEMENTS WITH PREVIOUS ARCH:** *"[They said] 'You've got [the executive architect's] document, its now over to [you,] the local team to get the thing built with the contractor'."*			
F-AR-DMi	*Fulfilling Statutory Requirements* *Trusting Our Advisors*	**SD DM APPROACH:** CONCEIVE, TECHNICAL CHECK, THEN EXPLAIN REQUIREMENTS: *[In proposing SD measures, we were] talking more with the M&E consultant first, and then informing the client. But we knew early on there would be [specific] requirements for Part L. So the*	(+/-) **IV-CONS-CONFORM RECOGNITION OF STATUTORY RESPONSIBILITIES:** *"Sustainability and environmental things were imposed upon them; they weren't [derived] from a client's point of view of 'this is what we want', this is: '[we] understand what we must have...'"*	F-AR SD DM APPROACH: CONCEIVE, TECHNICAL CHECK, THEN EXPLAIN REQUIREMENTS	IV-CONS-CONFORM >> SD minimums Fulfilling Statutory Requirements	IV for TV-Providing welcoming estates?
	Providing Welcoming Estates	**STATUTORY SD REQUIREMENTS**: GREEN ROOF AS PLANNING REQMT: *"We were putting a green roof on from the planning point of view, that sort of seems to make*	(-) **IV-CONS-CONFORM JUSTIFICATION:** *"'[again,] …we just want to meet the regulations. Do the littlest amount to make sure we pass'."*			
	Clarity; Becoming & Being "Clear"					

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v3

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F-AR-DMi	***TV-ST/OTC-SELFDIR: Clarity; Becoming & Being "Clear"***	**SD DM APPROACH**: *"we reached agreement with the M&E consultant first, then explained it to CL."*	(/) **IV-CONS-CONFORM RECOGNITION OF DECISION CONTEXT AND IMPLICATIONS:** *"[They said] 'Ah, right, ok, when you were asking us those questions about where we wanted all our stuff because you needed to work out the drainage, we now understand why you were asking those questions…'!"*	F-CL ADVISING AGAINST BREEAM	TV-ST/OTC-SELFDIR Clarity; Becoming & Being "Clear" IV-CONS-CONFORM >> SD minimums Fulfilling Statutory Requirements	
	Fulfilling Statutory Requirements	**SD APPR ADVISING AGAINST BREEAM [LOWER AGGRO]**: *"If the local authority aren't asking for it, we don't want to be offering… stay well clear!"* [based on bad				
	Trusting Our Advisors	**REAS MECH, BREEAM: LACK OF CLARITY, RELIABILITY**: *"we don't want to say we're going to meet BREEAM excellent, and no one knows what they're offering, or signing up to."*	(-) **TV-ST/OTC-SELFDIR CLARIFICATION; SD CHALLENGE**: *'[Why do we need PV panels on our existing building for this new building?]'*			
	Providing Welcoming Estates					
F-AR-CC1	***Clarity; Becoming & Being "Clear"*** *(Spiritually)*	**PV STATUTORY JUSTIFICATION:** *"You need to… because you've got a new building which needs to meet the building regulations, you have to meet them; we report*	(-) **TV-ST-BENEV-CARE ADDITIONAL SPATIAL REQUIREMENTS**: *"[what] if we're wanting to put [more] stuff in now?"*	PV STATUTORY JUSTIFICATION, OTHER COST-REDUCTION OPTIONS INSTEAD	TV-ST/OTC-SELFDIR Clarity; Becoming & Being "Clear" IV-CONS-CONFORM >> SD minimums Fulfilling Statutory Requirements	
	Providing Welcoming Estates	**PLANNING RESTRICTION re. no Roof PVs**: *"From a planning point of view, we couldn't put anything on the roof. So we couldn't put any plant on the roof, nothing*	(+/-) Both east-facing glass wall and PV panels installation on existing building retained.			
	Fulfilling Statutory Requirements					
	Trusting Our Advisors	**OTHER COST-REDUCTION OPTIONS**: *"we have talked to the client about big windows… […the original design was for an] East-facing building with a whole wall of glass. I probably wouldn't have done that…"*				
F-AR-CC2	***Clarity; Becoming & Being "Clear"*** *(Spiritually)*	**BOUNDARY VFR: PROJECT PROGRESS PRECLUDES LATE CHANGES**: *"Once, as a job becomes more real, once things start to get built, people can see what they're getting and so they've got more comment—it focuses their*	(+) **TV-ST-BENEV-CARE + IV-CONS-CONFORM + ST-HUMILITY**: *"'oh, it's too late, we can't have that [other stuff we wanted]…'"*	REALITY BITES	TV-ST/OTC-SELFDIR Clarity; Becoming & Being "Clear" IV-CONS-CONFORM >> SD minimums Fulfilling Statutory Requirements	
	Providing Welcoming Estates		*Building has been completed.*			
	Trusting Our Advisors	**REALITY BITES**: *"[So, seeing the designed artefact unfolding, clients and users start to react]; … [now] they can see what they're getting."*				
	Fulfilling Statutory Requirements					
AR11-CF-HKH6					**37.5%**	**3 / 3 / 3**
F-AR-DBr	***TV-SE + OTC-STIM: Lovely Family Home in the Country***	**CHALLENGE FR: DESIGN+SUSTAINABILITY APPROACH FOR COMPLIANCE:** *"we knew straight away it was going to be a nightmare… 'you can't just put a normal house there… you had to comply with PPS7 [Exemplary Design], EcoHouse standards, superduper all singing, all dancing, all bells and whistles sustainable.'"*	(/) **CLARIFICATION OF TV-CONS-TRAD+CONFORM GOALS + OBJECTIVES**: *"'Oh, good grief, no, no, we're very very old-fashioned. We want small windows, we want it to look like a house, we don't want it to look like a school or an office. Pitched roofs, we like dormers, we like twiddly [decorative] bits.'… on the one hand they were very traditional…"*	F-AR: DIFFERING IDEAS TO SITE & PPS7 APPROACH	TV-SE + OTC-STIM >> SD Lovely Family Home in the Country IV-CONS-TRAD+CONFORM Traditional Appearance (conservative)	Lovely Family Home in the Country is TV NOT IV
	IV-CONS-TRAD+CONFORM: Traditional Appearance		(/) **CLARIFICATION OF TV-CONS-TRAD+CONFORM GOALS + OBJECTIVES:** *"Their view was, they were showing us pictures from Country Life magazine, and 'we like this chunky window surround…' It was like, wow okay, so we've got a bit of a challenge here."*			
	TV-CONS-TRAD+CONFORM: Traditional Country Lifestyle	**DESIGN CONCEPT (preconceptions) + JUSTIFICATION:** MODERN STYLE FOR VIEWS AND LIGHT: *"AR13 had some grand idea, looking down the hills, over a lake, beautiful, absolutely wonderful, prime view, good for light, massive vista windows, sliding*				
	TV-CONS-TRAD+CONFORM: Old-fashioned, Conservative		(+) **CLARIFICATION OF TV-CONS-TRAD+CONFORM GOALS + OBJECTIVES:** *"'So we want to use reclaimed bricks,' 'we're quite keen on a ground source heat pump', so they've done their own research."*			
	IV-ST-UNIV: Sustainability *(Energy & Environment)*					
F-AR-DMi	Lovely Family Home in the Country Sustainability (Energy & Environment) Traditional Country Lifestyle Old-fashioned, Conservative Traditional Appearance	**PLANNING STRATEGY VIA DESIGN + SD:** *"That was very early on. We'd seen it one way. Without putting pen to paper, our view was 'shit, it can only be this way to achieve planning [and satisfy PPS7 through exemplary*	(+) **REITERATION OF TV-CONS-TRAD+CONFORM GOALS; IV-SE + OTC-STIM CAPITULATION/ AGREEMENT + JUSTIFICATION**: *'They wanted a traditional appearance; but we thought the modern approach would get planning, so we went ahead with that.'*	F-AR: PLANNING STRATEGY VIA DESIGN + SD	TV-SE + OTC-STIM >> SD Lovely Family Home in the Country	
		AR11-EVAL; RECOGNITION OF DIFFERENCES: *"Very old-school in their way of thinking [i.e. different from*				
		REFFRAMING SD CONTEXT: *'Sustainability was driven by the client; they had clear ideas straight away'*				
F-PCL/AR-CC1	Lovely Family Home in the Country Traditional Appearance Traditional Country Lifestyle Old-fashioned, Conservative	**F-PCL PLANNING OBJECTION TO MODERN APPEARANCE, UNCONTEXTUAL**: Parish Council against dissimilar, modern architecture, which is contravening national policy PPS7: *"the parish council were saying 'well,*	(-) **TV-CONS-TRAD+CONFORM REITERATION, INSTRUCTION:** Reverted back to traditional appearance	F-PCL: PLANNING OBJECTION TO MODERN APPEARANCE, UNCONTEXTUAL	TV-SE + OTC-STIM Lovely Family Home in the Country IV-CONS-TRAD+CONFORM >> SD- Traditional Appearance (conservative)	
		F-PCL: TRADITIONAL CONTEXT JUSTIFICATION: *"it's right there [next to the village] even there's a chunk of houses right next-door which are traditional, there's a church with a spire, so [context is entirely] trad'nl."*				
		F-AR-CC1: LOGIC-BASED AGREEMENT RE: LONGEVITY: *"Which, you had to say 'well, you're quite right.' They are saying, we want to build something right*				

Appendix 5.3 SS2 V-F-DM Construct Framework distilled from case-maps

v3

VARIABLES -- SEQUENCING -- EFFECTS				**ANALYSIS**		
IN THIS	FOR THESE **CLIENT VALUES (V-CL)**	THESE **FRAMES (F-AR, F-CON…)**	HAD THESE **EFFECTS ON D-M** (via F-CL)	DECISION **TRIGGERS**	VALUES **DRIVERS**	**PATTS+RELS**
PHASE	***BASIC VALUE STATEMENT CLUSTER***	***FRAMES***	***OUTCOME:*** ***Green good for SD;*** ***Red bad for SD***	*Act that sets in motion some course of events*	***WHICH VALUES are DRIVERS > SD++ OR SD--***	
F-PC/AR-CC2	Lovely Family Home in the Country Traditional Appearance Traditional Country Lifestyle Old-fashioned, Conservative	**F-PC-CC2: MOVE BOUNDARY, EASIER RIDE IN PLANNING**: *"With planning [consultant] advice, the planning expert advice was, 'well, if you build on that site, you've got to do this [PPS7 exemplar design]. If you can make that boundary there, it's an easier ride.'"* **F-AR-CC2: AGREEMENT + JUSTIFICATION RE: OBVIOUS PROXIMITY**: **[AR TO PCL]** *"The village boundary was in the wrong place, and it could extend to their bit of land. There's a redline and it's around town, there, just on the edge of it. It was obvious it should be within the village boundary."*	(-) **TV-CONS-TRAD+CONFORM INSTRUCTION**: Proceeded with the request to Council to relocate boundary and develop CL's preferred traditional house in the meantime	F-PC: MOVE BOUNDARY, EASIER RIDE IN PLANNING	IV-SE + OTC-STIM >> SD- Lovely Family Home in the Country	
F-AR-DM	Lovely Family Home in the Country Traditional Appearance Traditional Country Lifestyle Old-fashioned, Conservative	**REVISED BOUNDARY PERMITS PLANNING STRATEGY RECALIBRATION**: *"So, planning-wise it was an easier ride because it didn't need to be a highly sustainable, well insulated, one of these spectacular* **JUSTIFICATION FOR PLANNING STRATEGY RECALIBRATION**: *"Ironically, if they would've built to the national policy at the time [PPS7 Exemplary Design] it would've stuck out like a sore thumb!"*	(+/-) **TV-CONS-TRAD+CONFORM INSTRUCTION + JUSTIFICATION**: Traditional appearance trumped sustainability in materials choice: *"…They were wanting to use reclaimed bricks, but because they look better, not from the sustainability perspective…"* *AR11-EVAL: "It's been built now. And it's a traditional, lovely little house."*	F-AR: REVISED BOUNDARY PERMITS PLANNING STRATEGY RECALIBRATION	IV-SE + OTC-STIM >> SD Lovely Family Home in the Country	
AR11-CF-HFTH8						**20.0%** **4 / 1**
F-AR-DMi	*TV-CONS-SEC: Avoiding or Mitigating RISK* *TV-SE-POW: Profit* IV-ST-UNIV-CONCERN for IV-SE-POW: Marketing Value of SD for £ *IV-ST-UNIV-CONCERN for IV-SE-POW: Message Clarity for Desirability & Resales*	**DD-MEASURES + JUSTIFICATIONS**: *'We wanted to use Timber frame SIPS modular wall panel system; PFS: flexible applications and finishes, modular, panelised, quick erection…'* **DD-PROCESS + PAST EXPERIENCE JUSTIFICATION**: *'Positive past experience with SIPS material/method/system influenced our recommendations [system selection bias]'*	(-) **TV-CONS-SEC + TV+IV-SE-POW INSTRUCTION + CLARIFICATION:** *"That was all fine, then they wanted to see if we could appeal against Code 5 from planning consent, but still call it an eco-house…!"* (+/-) **IV-SE-POW + IV-ST-UNIV DEBATE RE: CLARITY FOR RESALE VALUE OF ECO-HOUSES:** *"How well defined? What is it? Nobody knows what an eco-house is – with the view to selling on the houses, they were toying with the view, 'well what do we call it? we want to call it an eco-house but what's an ecohouse?'"*	Avoiding or Mitigating RISK for profit	TV-CONS-SEC >> SD-- Avoiding or Mitigating RISK TV-SE-POW Profit	
F-AR-CC1	*IV-ST-UNIV-CONCERN for IV-SE-POW: Message Clarity for Desirability & Resales* IV-ST-UNIV-CONCERN for IV-SE-POW: Marketing Value of SD for £ *TV-CONS-SEC: Avoiding or Mitigating RISK* *TV-SE-POWER+CONS-SEC: Financial Viability, Soundness* *TV-SE-POW: Profit*	**SD-REDUCTION TACTICS + JUSTIFICATION**: Information clarity and availability: *'Available information clarity on PassivHaus: understandability, information accessibility, well-researched and documented, clear rules; Code 5 is unclear [i.e. on internet & accessible to buyers]'* **SD-REDUCTION JUSTIFICATION**: *PassivHaus Clarity on Delivery: clear rules re: window sizes, ventilation, etc.: "Something like passive house, the rules are the rules with that – it has to be this, it has to be this. Windows have to be a certain size, the ventilation has to be this…"*	(-) **IV-SE-POW + IV-ST-UNIV DEBATE OVER SD REDUCTION; JUSTIFICATION/REAS MECH:** council acceptance and comprehension/understanding of a lower offer; *"It triggered a debate, 'Will Brighton [Council] accept that [Level 4 justification]? Will Brighton understand that as an offer – we won't do code level 5, but we will do this…?'"* (-) **TV-CONS-SEC + TV+IV-SE-POW RESALES, DESIRABILITY / CREDENTIALS:** *"And then there was also talk of 'well, do we just go for code level 4, and just appeal what's been granted, and say we're not going to achieve that, or we can't achieve that financially it doesn't make sense, it's uneconomical…' But with the overall view of 'well, we need to sell it on.'"*	Avoiding or Mitigating RISK for profit	TV-CONS-SEC >> SD-- Avoiding or Mitigating RISK TV-SE-POW Profit	
F-AR-CC2	TV-SE-POWER+CONS-SEC: Financial Viability, Soundness TV-CONS-SEC: Avoiding or Mitigating RISK TV-SE-POW: Profit IV-ST-UNIV-CONCERN for IV-SE-POW: Marketing Value of SD for £ Message Clarity for Desirability & Resales	**DM-JUSTIFICATIONS**: PAYBACK AND MARKET DEBATE: *"There was a bit of a debate about, 'well, where does it pay back?' And I suppose that depends on who you're selling to."* **DM-JUSTIFICATIONS**: MARKET-BASED FINANCIAL DRIVERS FOR BUYERS: *'Where/when sustainability pays back: market segment, what people want, willingness-to-pay'*	(-) **TV-SE-POWER+CONS-SEC INSTRUCTION, JUSTIFICATION:** *'Proceed to appeal for Code 4; JUSTIFICATION: not achievable practically and financially; it's just uneconomical.'* *OUTCOME: Code 5 dispensation granted*	Avoiding or Mitigating RISK for profit	TV-SE-POWER+CONS-SEC >> SD- Financial Viability, Soundness TV-SE-POW Profit	

LEGEND			
Sustainability + Environment	=	**Initial TERMINAL**	**Bold RED**
Site Maximisation	=	Initial INSTRUMENTAL	Regular BLACK
Value-for-money	=	**Later TERMINAL**	**Bold Purple**
SIMPLICITY for Cost-effectiveness	=	Later INSTRUMENTAL	Regular Cyan

Appendix 5.3 SS2 Frame effects tables

See pages below.

SS2 FRAME EFFECTS TABLES (CG3)

Contents

POSITIVE EFFECTS for increased sustainability

From least committed/interested to most committed/interested

FOR THESE CLIENT VALUES (V-CL)	THESE FRAME TYPES (Ft-AR)	THESE FRAMES INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
▪ **Fulfilling Statutory Requirements** ▪ **Providing Welcoming Estates**	*AR Framing Approach*	*Appeals to responsibility and conformity*	"...we just want to meet the regulations. Do the littlest amount to make sure we pass."
	CL LOWER BOUNDARY	Recognise statutory responsibilities	
	Responsibility and Justifications to retain SD measures	"There were different regulations for energy efficiency [for the different use types]..."	
		"Green roof is a planning requirement"	Kept the green roof
		"You need to have PV's… because you've got a new building which needs to meet the building regulations; you have to meet them."	Kept the PV's, and the east glazed wall.
		"We'll [need to] report on alternative forms of energy, you have to meet a certain level of u-values and the energy used in the building."	
▪ **Maximised land value** ▪ **Return-on-Investment (ROI)** ▪ **Profit**	*AR Framing Approach*	*Principles-Strategy-Measures* *'Making appeals to the pocket'* *'Dangle a carrot'*	"it's just purely a business arrangement; maximum profit, maximum land value"
	CL LOWER BOUNDARY	Profit via Maximised land value	
	Add value, Increase profit	'Dangle a carrot; if you up your sustainability credentials, your chances of planning might be better'	GAIN-RELATED RECEPTIVITY: 'Three previous applications for the site had been turned down; Receptive to any ideas that would get a consent'
	Improvements, Benefits, Gain	'Achieve better than building regs'	INSTRUCTION + PRIOR JUSTIFICATION: 'Do whatever's necessary to achieve a consent'
		'Promising code level improvements'	
		'Demonstrate exemplary design to mitigate three failed applications'	
	Capitalising on obvious contextual features	'Ideal site for orientation' 'Great south-facing views'	
	Passive design measures	'Orientation, South-facing lounge windows, Large balconies'	
	CL UPPER BOUNDARY	Financial return	'No financial return, no roof terraces'
▪ **Saving money**	*AR Framing Approach*	*Ask questions early*	

FOR THESE CLIENT VALUES (V-CL)	THESE FRAME TYPES (Ft-AR)	THESE FRAMES INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
▪ **Buying green for personal tax benefits** ▪ **Good design**	CL LOWER BOUNDARY	Must have the views (Self-enjoyment)	AGREEMENT, INSTRUCTION: 'Great, I want glass everywhere'
	Design concept solutions	'Sliding glass wall; floating glass corner' … 'but with high thermal mass and insulation to offset the glazing'	
	Cost effective solutions	'Fit LEDs throughout the property, you're going to save yourself an absolute fortune because of the [low power consumption] of an LED.'	AGREEMENT, INSTRUCTION: 'OK, let's do the LEDs and the HE boiler too.'
		'Fit a decent [HE] boiler. Suddenly your energy performance SAP calcs are going to go through the roof; there's ways of being clever and not breaking the bank.'	
	CL UPPER BOUNDARY	Cost, savings Saving money Retaining, enhancing the views	
▪ **Profit** ▪ **Marketing Value of Sustainable Design for increased profit / SD as sales tool**	*AR Framing Approach*	*Balancing profit, practicalities, risk*	AGREEMENT, INSTRUCTION: "That was all fine; then they wanted to see if we could appeal against Code 5 from planning consent, but still call it an eco-house…!"
	CL LOWER BOUNDARY	Risk reduction – managing risk	
	Design Development Measures/Justifications	'We'd like to use a timber frame SIPS modular wall panel system; PFS [panelised facade systems] have flexible applications and finishes, modular, panelised, quick erection…'	
		'Positive past experience with SIPS'	
	CL UPPER BOUNDARY	Anything to increase profit Anything to reduce risk	
▪ **Good Quality with Added Value** ▪ **Landscape and Conservation** ▪ **Simplicity for Cost-effectiveness**	*AR Framing Approach*	*Listen—Playback—Values Activation—Favourable Decision*	TACTICS FOR ADDED VALUE/QUALITY: 'Remove one flat for communal storage' JUSTIFICATION: 'Retaining landscaping is important'
	CL LOWER BOUNDARY	Anything not 'good quality'	
	Design Approach	Good quality & higher standards, Environmentally-responsive design approach, Simple, well-detailed design strategy	
	Progressing the Design	Preventing negative impacts on site, appearance	

FOR THESE CLIENT VALUES (V-CL)	THESE FRAME TYPES (Ft-AR)	THESE FRAMES INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
▪ **Profit (with Added Value)**	CL UPPER BOUNDARY	Overcomplicated Deteriorating natural landscape or undermining conservation Adding value	DM TACTICS, JUSTIFICATION: 'Leave out greywater recycling in favour of conventional water supply and drainage; Expensive & overcomplicated'
▪ **Long-term Commitment** ▪ **Long-term Connection** ▪ **Longevity and Lifespan**	*AR Framing Approach*	*Clever spending*	'Complete agreement; leave the windows, insulate the curtains; LEDs, HE boiler, clever spending…'
	Explaining SD options in technical terms with benefit frames	'Spending money upfront, replacing windows, thicknesses, etc.'; Conservation implications, thermal performance; technical descriptions, etc. Leave the windows and insulate the curtains…	
	Clever spending, Cost savings	'Leave the windows as single glazed and put in a decent boiler, put in LED lights… spend the money more cleverly.'	
	Payback periods	'Thicker insulation for lower fuel bills'	AGREEMENT + INSTRUCTION: Proceed [with], Thick Insulation and PVs
		'PVs on 12-yr paybacks'	
	CL UPPER BOUNDARY	Long-term savings, Usability, Lifestyle improvements	
▪ **Traditional Country Lifestyle** ▪ **Sustainability (Energy & Environment)**	*AR Framing Approach*	*Context-specific design responses*	CAPITULATION/ AGREEMENT + JUSTIFICATION: 'They wanted a traditional appearance; but we thought the modern approach would get planning, so we went ahead with that.'
	Planning strategy via design + SD	Exemplary Design in a modern style for views and light; "looking down the hills, over the lake, beautiful, absolutely wonderful, prime view, good for light, massive vista windows, sliding doors…" 'EcoHouse standards'	
		Leveraging challenging conditions (site and statutory requirements) to secure SD improvements	
▪ **Pragmatic Sustainability** ▪ **Cost-effectiveness** ▪ **Future-Proofed; Lifespan**	*AR Framing Approach*	*'Fabric first' approach to maximise sustainability's chances*	AGREEMENT, DECISION: 'CL trusts AR's views, technically feasible, go for large array of PVs; investigate costs of ASHP.' JUSTIFICATION: Balancing cashflow & CapEX w/ lifespan interests: "... it's partly about cash flow and how much they can spend up-front, but also, they do have an eye to lifespan"
	CL LOWER BOUNDARY	Not contravening planning regulations	
	Fabric first approach	'Fabric first approach permits later addition of "true renewables"; Facilitated by continuing technology price reductions… and increasing popularity' "	
	Renewables Framing Approach	"[We] try and keep the client on board as long as possible… if you're losing it at the tender stage, there's no time left to manoeuvre."	

FOR THESE CLIENT VALUES (V-CL)	THESE FRAME TYPES (Ft-AR)	THESE FRAMES INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
	Bad stories: ASHP vs GSHP popularity, function, and cost	“You'll always hear bad stories;” 'Disagreement: GSHP better, but not done cheaply; needs the right conditions and right installer'	'THEORETICAL SUSTAINABILITIES: "[they'll] go along with a certain amount up to planning, because they think that helps them secure planning."
	PVs performance v deterioration	“Yes, if you don’t clean them, the performance will go down dramatically.” 'But 25% deterioration over 25 years is already built into calcs.'	
▪ **Tangible, Practical, Pragmatic** ▪ **Future-Proofing, Low Running Costs** ▪ **Value-for-money**	*Framing Approach*	*Listen, Ask, Make appeals to optimise or strike the best balance possible between capital outlay and some sort of benefit*	AGREEMENT + INSTRUCTION: Proceed towards 'exemplary design'
		Leveraging challenging conditions (site and statutory requirements) to secure SD improvements	
	Planning approach: Challenge Frames with Solution-Tactic Frames	‘Outside developable area, challenging in planning; Seek exemplary design justification to satisfy NPPF Para55 in countryside’	
	Benefits; Implied benefits	‘Cleaning it all up and stripping off all the unnecessary stuff’	AGREEMENT + INSTRUCTION: 'Agreed to go to planning with P55 Justification and modern take [interpretation] on a traditional building; Stripping off unnecessary detail.'
		‘Contemporary interpretation of a traditional building’	
		‘Bus stop nearby to satisfy sustainable location requirements’	
	Benefits of Tangible and Practical Solutions	‘Thicker insulation for lower fuel bills’	AGREEMENT + INSTRUCTION: Proceed [with], Thick Insulation and PVs
		‘PVs on 12-yr paybacks'	
	CL UPPER BOUNDARY	Benefits Cost-savings Value-for-money	
▪ **Higher standards** ▪ **Future Marker** ▪ **Green agenda for Sustainability Identity**	*Framing Approach*	*Client satisfaction through*	CL changing mind after seeing initial design
	CL LOWER BOUNDARY	‘Conventional, pitched roof Barratt-style building’	
	Thermal efficiency	'Conventional design, low fee; Full green scheme, more time, different beast, higher fee…'	INSTRUCTION: ‘we need a design for a thermally efficient vicarage’ JUSTIFICATION, IDENTITY: 'It’s a marker for our future; we want a sustainable identity'
		'Orientation, minimal windows, thermal mass...'	
▪ **Sustainability and Energy Performance**	CL LOWER BOUNDARY	Not contravening planning regulations	
		▪ Context, Challenges, Constraints + Implications; Design Approach; then Design Concept, then:	

FOR THESE CLIENT VALUES (V-CL)	THESE FRAME TYPES (Ft-AR)	THESE FRAMES INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
▪ **Connection and Access to Nature** ▪ **Sustainability and Well-being**	*Framing Approaches*: Tangibles + Intangibles	▪ Principles & Systems discussions, Alternatives & Implications (use patterns, etc.), then: ▪ Renewables Evaluation, Justifications, Alternatives	
		Leveraging challenging conditions (site and statutory requirements) to secure SD improvements	
		'We are pursuing FABRIC ENERGY PERFORMANCE; whereas the M&E consultant is pursuing OVERALL ENERGY PERFORMANCE'	
		'Innovation requires "pushing the boundaries" and therefore trust and respect'	
	Recommendations and implications	'Recommend you consider PassivHaus' with 'Appropriate, location-based applications of PassivHaus principles.'	AGREEMENT, INSTRUCTION+ CAVEAT: They agreed, but "they don't want to be in a sealed box; they want to live in a courtyard" RFI: 'They were OK with passive house principles; Asked: What about using GSHP?'
		'We think a low-lying and highly sustainable, year-round courtyard design would be an 'innovative response' in these circumstances; and we need to get the M&E right at design stage'.	
	Measures	'Natural Ventilation + Air Tightness for Controlled Ventilation'	AGREEMENT, INSTRUCTION: 'They went for off-grid / PVs, and controlled NAT.vent, openable windows...'
		'Could go Off-Grid: Could easily have a large area of solar PVs, circa 140 sqm'	
		'M&E system also depends on what sort of boiler you'd have and how much you'd want to use it'	
		'Retractable pergola, large eaves overhangs and deep window reveals for solar shading'	AGREEMENT, INSTRUCTION: 'They agreed to proceed with the alternative, and wanted to retain the intimate courtyard garden as open-air.'
		'GSHP depends on the right soil conditions; its mechanical; questionable efficiency 1:4-1:2; running/maintaining pumps, cost ... would it be better to have more PVs, or put up a wind turbine?'	AGREEMENT, INSTRUCTION, JUSTIFICATION: 'They went for the GSHP with underfloor heating and the PV; appreciated the efforts on performance, helps keep down running costs'
	CL UPPER BOUNDARY	Feasibility / Viability / Cost	
▪ **Sustainable lifestyle** ▪ **Dream home**	*Framing Approaches*	*Make appeals to their better nature*	
		Leveraging challenging conditions (site and statutory requirements) to secure SD improvements	

FOR THESE CLIENT VALUES (V-CL)	THESE FRAME TYPES (Ft-AR)	THESE FRAMES INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
▪ **Naturalistic Experience, Connection to Nature**		Challenge-framing and Boundary-framing: not afraid to challenge client to 'see how deep their commitment was and how deep their pockets'	
		Challenges-Requirements-Responses; Approach-Method-Justification	
	Planning approach: Challenge Frames with Solution-Tactic Frames	'Difficult site requires PPS7, exemplary design, including carbon zero, for planning; everything to do with Code 6'	DECISION: 'Going for Code 6, submit planning, including wind turbine, PVs, etc. "...it was everything to do with Code 6".'
		'We really needed to make sure that we're doing everything that we needed to do to make sure we got the Code 6 for planning'	
		"Create a sequence of organic spaces and forms brought together by a unifying curved wall […] with a flat, [trafficable] green roof, PV cells, and wind turbine"	
	Specific SD Measures / Design Responses	Orientation, sunlight, and passive solar gain …	"They went in for... everything—the lot…" "They assured us it was about a sustainable lifestyle and not about the money"
		Everything to do with getting the points for Code 6: biomass boilers, wood-burning stoves, high insulation levels… triple glazing, …green roofs, PV's, wind turbines…	
		"What about if we put a green roof on the garage because there was no PV there?"	AGREEMENT, DECISION FR: "The client promised me that he would put a green roof on the garage..."
	CL UPPER BOUNDARY	Whatever it takes to achieve their dream home	
▪ **Green Building conservation** ▪ **Sustainable design**	*Framing Approach*	*Listen, Ask, Propose* *Make appeals to their better nature*	
		Leveraging client willingness/capability to secure SD improvements	
	Passive approach	'Everything envelope then technologies and systems bolt-on's (boilers & renewables, etc.)'	AGREEMENT, INSTRUCTION: 'OK, proceed on that basis...'
		'Highly insulated envelope & windows; High-efficiency boilers, then everything else, renewables, etc.'	
	Technologies and systems	'…biomass boilers, whole-house heat recovery, slimline double-glazing, improved thermal insulation and airtightness, improved acoustic performance; ... low-energy lighting and appliances, and a heating management system.'	AGREEMENT, INSTRUCTION: "[Go with the] biomass, heat recovery, PVs, double-glazing, you name it... we did everything, and it worked [incl. HE boilers, and solar thermals]"

FOR THESE CLIENT VALUES (V-CL)	THESE FRAME TYPES (Ft-AR)	THESE FRAMES INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
	Technology + operation mindset ‘Buy-in’	‘It's a question of buying into a technology and into a way of operating and using the building’	AGREEMENT, INSTRUCTION: 'They bought in… all of it, [just needed to make sure it works]'
	CL UPPER BOUNDARY	Reliability, not experimentation	

NEGATIVE EFFECTS for decreased sustainability (incl. critical challenges)

NEGATIVE EFFECTS for decreased sustainability

FOR THESE CLIENT VALUES (V-CL)	THESE FRAME TYPES (Ft-AR)	THESE FRAMES DECREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
Any values	AR's Approach / Attitude	Ambivalence; Frustration; Disinterest; Disengagement [BETG6]	Elicits INDECISION, DESIGN CHANGES on style / materials; lack of engagement on SD issues
		Taking offense, Resentment	Elicits GOAL-ORIENTED REMINDER: 'CL wants adaptability for usability, not sustainability'
Maximum Profit (Easy Money)	F-AR: Cost to provide Benefit	Marginal cost for a worthwhile improvement ("you've got a small plot and a great view out somewhere from the roof") 'Agent tells CL it's going to cost £500 more (per unit) to build a roof terrace than they'll get back (in return)'	INSTRUCTION + JUSTIFICATION: No financial return, no roof terrace: 'it's going to cost £500 more to build than the return, they won't spend it.'
▪ **Fulfilling Statutory Requirements** ▪ **Providing Welcoming Estates**	BREEAM is tricky delivery	"If the local authority aren't asking for BREEAM, we don't want to be offering… stay well clear! We don't want to say we're going to meet BREEAM, and no one knows what they're offering, or signing up to."	Didn't do BREEAM
▪ **Adaptability for Usability** ▪ **Future-proofing**	Design solutions	CONTEXT-SPECIFIC ENERGY DEMAND, PERFECT OPPORTUNITY: "Brilliant, swimming pool, energy demand, GSHP"	EARLY DISAGREEMENT; GSHP INSTRUCTION: "Nah, I don't want that."
▪ **Avoiding or Mitigating RISK** ▪ **Profit**	Challenges to Sustainability	DEBATE RE: CLARITY FOR RESALE VALUE OF ECO-HOUSES; ("could we appeal against Code 5 from planning consent, but still call it an eco-house?")	AR's willingness to support client and appeal against Code 5 with lack of pressure to retain elicits acceptance, further debate, and reduction to Code 4
		SD-REDUCTION TACTICS + JUSTIFICATION: Research-based tactics: 'Available information clarity on PassivHaus: understandability, information accessibility, well-researched and documented, clear rules; Code 5 is unclear [i.e. on internet & accessible to buyers]'	
▪ **Tangible, Practical Benefits** ▪ **Future-Proofing, Low Running Costs**	Cost + Change	F-CON: 'We can get it done cheaper somewhere else'	Elicits AGREEMENT and CONCESSIONS AGAINST SD
	Cost + Quality-Reduction	F-CON: 'Make it more conventional, save money'	

FOR THESE CLIENT VALUES (V-CL)	THESE FRAME TYPES (Ft-AR)	THESE FRAMES DECREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
▪ **Views (self-enjoyment)** ▪ **Buying green for personal tax benefits** ▪ **Saving money** ▪ **Good design**	Statutory Building Performance Failure	SOLUTION FR: BEND THE RULES: “...you get an energy consultant to do the thermal calcs for you and they'll pass almost anything for you.”	AGREEMENT, INSTRUCTION: '[Proceed with the] Energy Consultant.' "... they'll work their magic, and they'll pass the test."
▪ **Intelligent, Balanced Spending / VFM** ▪ **Balancing Costs & Agendas/Demand** ▪ **Best Value Performance + Energy Efficiency** ▪ **Personal / Family Gain (new house)** ▪ **Sustainability's Environmental Benefits**	Design development + Detailing	Insistence on expensive detailing	Elicits JUSTIFICATION, to balance costs and INSTRUCTION to dismiss AR during construction
		Costs favouring either lower CapEx or Lower LCC, i.e. Unbalanced	
		Solutions not offering value-for-money	
		Contractors offers of Cost Savings	Elicits AGREEMENT and significant CONCESSIONS AGAINST SD
	Anything considered ‘too expensive’	GSHP vs. ASHP	Elicits REJECTIONS or temporary agreements until tender or construction value-engineering and cost-savings [AR14-SQH2HMH2]
		Over-specified insulation	
		Expensive detailing with unconventional materials or non-standard formats	
▪ **Simplicity for Cost-effectiveness +** ▪ **Profit (with Added Value)** ▪ **Landscape and Conservation** ▪ **Good Quality / Added Value**	Anything considered overcomplicated	Greywater recycling (storage tanks, pumps to maintain)	Elicits REJECTION; a step too far; locates UPPER BOUNDARY ACTIVATES V-CL: SIMPLICITY for Cost-effectiveness
		District heating (problems with legal separation)	
		Structural solutions [HSRL3]	
▪ **Lovely Traditional Family Home in the Country**	Planning objections	MOVE VILLAGE BOUNDARY, EASIER RIDE IN PLANNING: "the planning expert advice was, 'well, if you build on that site, you've got to do this [PPS7 exemplar design]. If you can make that boundary there, it's an easier ride.'"	INSTRUCTION: Proceeded with the request to Council to relocate boundary and develop CL's preferred traditional-style house in the meantime

FOR THESE CLIENT VALUES (V-CL)	THESE FRAME TYPES (Ft-AR)	THESE FRAMES DECREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
▪ **Sustainability (Energy & Environment)** ▪ **Traditional Country Lifestyle**		"So, planning-wise it was an easier ride because it didn't need to be a highly sustainable, well insulated, one of these spectacular houses."	
▪ **Meeting Targets; Getting it Built, On Time, On Budget** ▪ **Modern, Inclusive, (Sustainable) Facilities**	BREEAM is tricky delivery	'Their project manager… Now he didn't like the Carbon Management Plan, but he's on the client's behalf, he has to implement it!' 'BREEAM is problematic in practice'	LATE CLIENT ENGAGEMENT on heat pumps; green roof experiences; CHP repair costs
▪ **Green Building** ▪ **Conservation, Restoration** ▪ **Money's no object**	System Detailing	EXPERIMENTATION vs RELIABILITY: "Do you want to be an experiment, or do you want to deliver? Do you want to take that risk, or do you want to use products that actually you know are working?"	'We want to use products that you know are working'

CHALLENGE MANAGEMENT THROUGH FRAMING to retain, protect, enhance sustainability

MANAGING CHALLENGES THROUGH FRAMING to retain, protect, enhance sustainability

FOR THESE CLIENT VALUES (V-CL)	THESE TRIGGER TYPES	THESE FRAME TYPES (Ft-AR)	THESE FRAMES MAINTAIN OR INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
		Framing Approach	Clarify Challenges, Characterise Implications, Recommend Action (and effect implications)	
▪ **Green Building** ▪ **Conservation, Restoration** ▪ **Money's no object**	F-AR: SYSTEM EXPERIMENTATION vs RELIABILITY RISK	System Detailing; Specific detailed measures	'... we'd suggest you go for biomass boilers, whole-house heat recovery, slimline double-glazing, improved thermal insulation and airtightness, improved acoustic performance; ... low-energy lighting and appliances, and a heating management system...'	'They bought in… all of it, [just needed to make sure it works]'
▪ **Higher standards, decent building** ▪ **Thermal efficiency** ▪ **Future Marker; Sustainable Image, Identity**	F-AR: LOWER BOUNDARY ACTIVATED	Conventional design & AR disparagement	'I designed them a conventional, pitched roof Barratt-style building'	CHANGE ORDER: "they suddenly realized, 'no, no…' game change. 'Chuck that out the window, start again'. 'It's a marker for our future; we want a sustainable identity'."
		Change to approach, implications	'Conventional design, low fee. Full green scheme, more time, different beast, higher fee…'	RECALIBRATION: 'we want passive house. Passive house standards. … we want a green, PassivHaus vicarage'.
		Specific detailed measures	'Orientation, minimal windows, thermal mass...'	AGREEMENT, INSTRUCTION: "they bought into it, and I spent more time on it. So, I got the building right… they were buying into the green agenda"
▪ **Cost-effectiveness [value-for-money?]** ▪ **Future-Proofed; Lifespan** ▪ **Pragmatic Sustainability**	COST CHALLENGE: high tenders; Over Budget F-CL: *"Can we consider removing PVs after planning?"*	SD APPROACH Reinforcement	'FABRIC FIRST APPROACH permits later addition of "true renewables"; Facilitated by continuing technology price reductions'	RISK-AVOIDANCE: "'They haven't got that money, they're not going to do it.' So, there's no point in antagonising them particularly by saying, 'well, you've really got to do it' when it's not reinforced [by them]."
		SD DM TACTICS	DELAY DECISION: "You try and keep the client on board as long as possible… if you're losing it at the tender stage, there's no time left to manoeuvre."	
		Cost savings	FABRIC+ENERGY APPROACH: 'Highly efficient fabric reduces energy reliance, less renewables.' 'Speed of technological change favours decision delay re: efficiencies+ alternatives/ new future technologies; opportunities for more persuasion'	AGREEMENT, DECISION: 'Keep the highly-efficient fabric; Keep PVs, but...' LATER DECISION, JUSTIFICATION: 'Procure as D&B to save costs; reduce to smaller PV array'

FOR THESE CLIENT VALUES (V-CL)	THESE TRIGGER TYPES	THESE FRAME TYPES (Ft-AR)	THESE FRAMES MAINTAIN OR INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
		Justifications to retain	PLANNING+FINANCIAL JUSTIFICATIONS TO RETAIN: Changing a planning condition costs more, 5-year PV payback, "better to just get on with it", make fabric efficient, decide on renewables latest possible	
▪ **Connection and Access to Nature** ▪ **Sustainability and Well-being** ▪ **Mobility** (via courtyard living) ▪ **Technical Performance for Quality of Life**	F-AR: M&E designers' limitations reached	Design development and coordination	COURTYARD SOLAR DESIGN: "we asked the M&E Consultants: 'solar shading the Courtyard, do we need a canopy or not?' They can't react without a design, can't have a debate. Even with a model they couldn't tell me exactly." ALTERNATIVE SOLUTIONS: 'retractable pergola, large eaves overhangs, and deep window reveals'	AGREEMENT, INSTRUCTION: 'agreed to the alternative because wanted to retain the intimate courtyard garden as open-air.'
	Technical delivery challenge	GSHP & O/A energy performance goals	'GSHP is mechanical; questionable efficiency 1:4-1:2; running/maintaining pumps, cost... would it not be better to have more PVs, or ... put a wind turbine up?'	INSTRUCTION: '[But] they went for the GSHP with underfloor heating and PVs'
		AIR-TIGHTNESS	'It's a real challenge meeting PassivHaus air-tightness criteria with a courtyard house that's not a sealed box'	AGREEMENT, INSTRUCTION: 'They agreed and we took that scheme to planning'
▪ **Creating a Dream Family Home** ▪ **Nature, Naturalistic Experience, Connection** ▪ **Sustainability & Sustainable Energy**	F-Community: Objection = EXISTENTIAL CHALLENGE	Community's turbine objections + implications	IMPLICATIONS re: visibility & noise on sensitive site: "We're not the only parties in this. You put a turbine on almost any site and there's uproar... this was a sensitive site" …	MUTUAL AGREEMENT, DECISION: NEED TO GET PLANNING: "We agreed to take the turbines off and put more PVs [to compensate renewables loss]"
		Community's flat roof objections + implications	IMPLICATIONS: "[but] there was a planning [visibility] issue with the height of the roof and PV's, so in the end you could have one or the other." RECOMMENDATIONS: With a flat roof, "The way to get PVs was actually to hide them; they're not quite as efficient flat, ...it's not as much as you'd think but, you lose about 7%"	AGREEMENT, DECISION: 'proceed with PVs at a low-angle on the flat roof; accept the efficiency loss'
▪ **Good Quality with Added Value** ▪ **Landscape and Conservation**	F-PC: 'Adding more materials' (i.e. lacks simplicity, costs more)	Challenge-framing + evaluation + justification	"Overexcited Planning Consultant (PC) who thinks he's a designer"; "There's a limit…"; RECOMMENDATION to maintain 'Simple well-	Elicits AGREEMENT, INSTRUCTION to Maintain design intent & simplicity; Elicits JUSTIFICATION, for Cost-Effectiveness

FOR THESE CLIENT VALUES (V-CL)	THESE TRIGGER TYPES	THESE FRAME TYPES (Ft-AR)	THESE FRAMES MAINTAIN OR INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
▪ **Simplicity for Cost-effectiveness** ▪ **Profit (with Added Value)**			detailed [design strategy]" JUSTIFICATION: 'Cheaper, more sustainable, less waste...'	
▪ **Meeting Targets; Getting it Built, On Time, On Budget (PM)** ▪ **Getting the Best Project for the Budget (PM)**	COST CHALLENGE: TENDER RETURNS (£1.8m) WAY OVER BUDGET (£400k)	Disjointed client requirements	"Where it's not joined up, the building I worked on was part of a masterplan, which goes back over 10 years; so 10 years' ago, as far as I understand, BREEAM didn't exist."	DECISION TO REDUCE AREA but KEEP BASIC FUNCTIONS: "We had to reduce the area... So we [aren't going to] achieve what the original [design] had, because the original one had a clubhouse, which we didn't include; and the catering facility ... that didn't happen."
			"From port-a-cabins to a BREEAM excellent building, with an unrealistic budget, you know, that's what I found a bit strange..."	
	Problem achieving BREEAM points	Rescue BREEAM problems; Regulations retention	"The project was on site and we run into problems and we try to somehow rescue, achieve, get BREEAM points to achieve the BREEAM excellent."	PM SUGGESTS BRING IN OWN SUSTAINABILITY REPS: Late SH-Engagement on SD to "deal with a problem, rather than being brought in early doors…"
				SUGGESTIONS FOR WASTEWATER HEAT RECOVERY (WWHR): "what they were suggesting […] Lots of showers, hot water, goes down the drain, you take the heat from it and you recycle the heat. Great."
	Significant problem with green roof on another project	KNOWLEDGE FAMILIARITY; TECHNICAL CRITERIA	FAMILIARITY re TECHNICALITIES: "So you know, that was a mat, that was a green mat, it's still green roof. …I've really begun to understand [green roofs], quite how they work, how they drain, how they're built-up, and the different types…" '[But] I've got to go back and read up about these, what have I specified here? As far as I know, I specified a green roof… [i.e. it's not a green mat]."	AGREEMENT: Retain green roof and proceed. AR11-PSB1
▪ **Fulfilling Statutory Requirements** ▪ **Trusting Our Advisors**	LATE CHANGES: CL asks to remove PVs on ex-building	PV STATUTORY JUSTIFICATION and PLANNING RESTRICTION; regulations retention	"You need to… because you've got a new building which needs to meet the building regulations, you have to meet them; we report on alternative forms of energy, you have to meet a certain level of u-values and the energy used in the building."	AGREEMENT, DECISION: Both east-facing glass wall and PV panels installation on existing building retained.

FOR THESE CLIENT VALUES (V-CL)	THESE TRIGGER TYPES	THESE FRAME TYPES (Ft-AR)	THESE FRAMES MAINTAIN OR INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
			"From a planning point of view, we couldn't put anything on the roof. So we couldn't put any plant on the roof, nothing projecting above the flat roof. We had a plant room area, which is an external room area, which is fine. So the PV requirement, we [need to] put it on the existing building roof, remotely!"	
	LATE CHANGES: CL asks to add spaces/features	PROJECT PROGRESS PRECLUDES LATE CHANGES	"Once, as a job becomes more real, once things start to get built, people can see what they're getting and so they've got more comment—it focuses their mind more. [...] They were wanting to put [more] stuff in now… but it's too late."	"'oh, it's too late, we can't have that [other stuff we wanted]…'" they seemed to understand that, but only after seeing what they were getting."

CRITICAL CHALLENGES RESULTING IN SD LOSS

MANAGING CHALLENGES THROUGH FRAMING which forfeited, sacrificed, reduced or lowered sustainability

FOR THESE CLIENT VALUES (V-CL)	THESE TRIGGER TYPES	THESE CHALLENGE FRAME TYPES	THESE FRAMES MAINTAIN OR INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)	VALUES DRIVERS
▪ **Tangible, Practical Benefits** ▪ **Future-Proofing, Low Running Costs**	COST CHALLENGE: high tenders; Over Budget	Cost + Change	F-CON: 'We can get it done cheaper somewhere else'	Elicits AGREEMENT and CONCESSIONS AGAINST SD	IV-SE for TV-SE_£££ >> SD- Cost Savings / Value-for-Money
		Cost + Quality-Reduction	F-CON: 'Make it more conventional, save money'		
▪ **Intelligent, Balanced Spending / VFM** ▪ **Balancing Costs & Agendas/Demand** ▪ **Value-for-money**	COST SAVINGS	F-CON: COST SAVINGS	F-CON: COST SAVINGS: 'We can do bricks cheaper…'; 'You don't need that much insulation…'	Elicits AGREEMENT and significant CONCESSIONS AGAINST SD	IV-SE+CONS & TV-SE+CONS_£££ >> SD— Balancing Costs & Agendas/Demand; Value-for-money
▪ Cost-Control (Avoid Overspending, Completion) ▪ Benefits of Cost-Effectiveness for Saving Money ▪ Appropriate Design Styling ¬ any £££ ▪ Lovely, Traditional House ¬ any £££ ▪ Traditional, Conservative Lifestyle ¬ any £££	COST CHALLENGE: High tender prices	CL Prior awareness of costs	F-AR: '1) High costs, but CL prior awareness; 2) Understanding of Brief/Spec reduction because of Cost / Expensiveness; 3) Concern about contractor with limited capability	Elicits EVALUATION: ""Costs 'more expensive than I thought' Elicits NEGATIVE DECISION+JUSTIFICATION: 1) Sustainable timber stair 'too expensive'; 'Going to something cheaper; Budget taken up elsewhere'; 2) COST SAVINGS: REDUCE AR SITE PRESENCE	IV-SE for TV-SE-CONS_£££ >> SD- Cost-Control (Avoid Overspending, Completion)
	COST SAVINGS OPPORTUNITY	F-CON Cost savings	F-CON: Offers COST SAVINGS on stairs	Elicits NEGATIVE DECISION + JUSTIFICATION: 1) 'Cost-saving Decisions made on site, made changes to details not originally agreed'; 2) 'Specifications and insulation reduced to minimum regulations to save money'	
▪ **Views (self-enjoyment)** ▪ **Saving money** ▪ **Good design** ▪ **Getting the job done**	Statutory Building Performance Failure	F-AR: SD DETAIL Recommendations + COST SAVINGS; BENEFIT	SOLUTION FR: BEND THE RULES: "...you get an energy consultant to do the thermal calcs for you and they'll pass almost anything for you".	AGREEMENT, INSTRUCTION: '[Proceed with the] Energy Consultant.' "... they'll work their magic, and they'll pass the test."	IV-SE-CONS for TV-SE-CONS >> SD+ Saving money

FOR THESE CLIENT VALUES (V-CL)	THESE TRIGGER TYPES	THESE CHALLENGE FRAME TYPES	THESE FRAMES MAINTAIN OR INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)	VALUES DRIVERS
▪ **Financial Valuation (of sustainability features) for Profit** ▪ **Maximum Profit** ▪ **Make money on asset (Easy Money)** ▪ **Maximise Site to Maximise Land Value** ▪ **Getting Planning Consent** ▪ **Minimum Involvement**	COST	F-AR: Cost to provide Benefit F-AGNT: Extra cost, no £ return	F-AGNT-CC: COST/BENEFIT/RETURN: Marginal cost for a worthwhile improvement ("you've got a small plot and a great view out somewhere from the roof") 'Agent tells CL it's going to cost £500 more (per unit) to build a roof terrace than they'll get back (in return)'	(-) TV-SE COST/LOSS INSTRUCTION + JUSTIFICATION: No financial return, no roof terrace: it's going to cost £500 more to build than the return; they won't spend that £500.	TV-SE_££ >> SD-Maximum Profit
▪ **Saving Money** ▪ **Adaptability for Usability** ▪ **Longevity and Lifespan for Usability** ▪ **Future-proofing** ▪ **Long-term connection; Comfortable retirement lifestyle**	F-CL: GSHP Not user-friendly / easy-to-use	F-AR: Clever spending / cost savings	PRE-JUDGEMENT WITH TECHNICAL DESCRIPTIONS FOR EXISTING WINDOWS: 'spending on replacing, tiny upgrade in thermal performance (exaggerated value); leave breathable timber sash windows, insulate the curtains'	AGREEMENT; INSTRUCTION: 'Complete agreement; leave the windows, insulate the curtains; LEDs, HE boiler, clever spending…'	TV-SE-CONS >> SD-Saving Money
▪ **Avoiding Community Discord** ▪ **Securing Planning Consent** ▪ **Creating a Dream Family Home** ▪ **Naturalistic Experience,**	F-COMM: objection to turbines	Planning objections	COMMUNITY'S TURBINE OBJECTIONS + IMPLICATIONS re: visibility & noise on sensitive site; "You see, we're not the only parties in this. You put a turbine on almost any site and there's uproar... this was a sensitive site"	MUTUAL AGREEMENT, DECISION FR: NEED TO GET PLANNING: 'Take the turbines off, put more PVs'	IV-SE/CONS-ACHIEVE/POW/SEC Securing Planning Consent TV/IV-SE-OTC+CONS >> SD/ Creating a Dream Family Home
			COMMUNITY'S FLAT ROOF OBJECTIONS re: traditional pitched tile-hung roofs, no visible PVs: "we wanted a flat roof, whereas the community wanted	AGREEMENT, DECISION FR: 'proceed with PVs at a low-angle on the flat roof; accept the efficiency loss'	

FOR THESE CLIENT VALUES (V-CL)	THESE TRIGGER TYPES	THESE CHALLENGE FRAME TYPES	THESE FRAMES MAINTAIN OR INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)	VALUES DRIVERS
Connection to Nature ▪ **Sustainability & Sustainable Energy** ▪ **Sustainable Lifestyle**			pitched roofs, but pitched roofs make it much higher, etc., and if we had gone for pitched roofs, they wanted to see traditional tile hung and they certainly didn't want to see PVs"		
▪ **Cost Savings / Saving Money** ▪ **Creating a Dream Family Home** ▪ **Naturalistic Experience, Connection to Nature**	COST / SAVING MONEY		AR LATER CHALLENGE TO CL DM: "What about if we put a green roof on the garage because there was no PV there?"	(+) AGREEMENT, DECISION FR: "The client promised me that he would put a green roof on the garage because there was no PV there." (-) DISAGREEMENT, DECISION FR: GREEN ROOF TOO COSTLY "But when it came to it, he didn't put them on, and I said 'what about that' and … he grumbled 'ah, well, its costly and… So at that stage, the cost has come in more' "	"TV-SE-CONS >> SD- Cost Savings / Saving Money TV/IV-SE-OTC+CONS Creating a Dream Family Home"
▪ **Balancing Budget for Completion (Risk-Avoidance)** ▪ **Cost-effectiveness; Saving Money [value-for-money?]** ▪ **Investigating Possibilities, Potential (benefit)** ▪ **Trust** ▪ **Future-Proofed; Lifespan** ▪ **Pragmatic Sustainability**	COST CHALLENGE: high tenders		IV/TV-SE DECISION-QUERY: "Can we consider removing PVs after planning?" (IV-SE RISK-AVOIDANCE: " 'They haven't got that money, they're not going to do it.' So, there's no point in antagonising them particularly by saying, 'well, you've really got to do it' when it's not reinforced [by them]."	TV-ST AGREEMENT, DECISION: 'Keep the highly-efficient fabric; Keep PVs, but...' IV+TV-ST DECISION, JUSTIFICATION: 'Procure as D&B to save costs; reduce to smaller PV array'	IV-SE-CONS+SEC/PERS for IV-SE >> SD- Balancing Budget for Completion (Risk-Avoidance) TV-SE-CONS/SEC Cost-effectiveness; Saving Money [value-for-money?]
▪ **Lovely Family Home in the Country** ▪ **Traditional Appearance**	F-PCL: objection to modern appearance	Planning objections	F-PCL PLANNING OBJECTION TO MODERN APPEARANCE, UNCONTEXTUAL: Parish Council against dissimilar, modern architecture,	REITERATION, INSTRUCTION: Reverted back to traditional appearance	"IV-SE + OTC-STIM >> SD- Lovely Family Home in the Country"

FOR THESE CLIENT VALUES (V-CL)	THESE TRIGGER TYPES	THESE CHALLENGE FRAME TYPES	THESE FRAMES MAINTAIN OR INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)	VALUES DRIVERS
▪ **Traditional Country Lifestyle** ▪ **Old-fashioned, Conservative**			which is contravening national policy PPS7		
	F-PC: MOVE BOUNDARY, EASIER RIDE IN PLANNING	F-AR: REVISED BOUNDARY PERMITS PLANNING STRATEGY RECALIBRATION	MOVE BOUNDARY, EASIER RIDE IN PLANNING: "With planning [consultant] advice, the planning expert advice was, 'well, if you build on that site, you've got to do this [PPS7 exemplar design]. If you can make that boundary there, it's an easier ride.'	INSTRUCTION: Proceeded with the request to Council to relocate boundary and develop CL's preferred traditional house in the meantime	
	Avoiding or Mitigating RISK for profit	SD-REDUCTION TACTICS + JUSTIFICATION	Information clarity and availability: 'Available information clarity on PassivHaus: understandability, information accessibility, well-researched and documented, clear rules; Code 5 is unclear'	DEBATE OVER SD REDUCTION; JUSTIFICATION/REAS MECH: council acceptance and comprehension/understanding of a lower offer; "It triggered a debate, 'Will Brighton [Council] accept that? Will Brighton understand that as an offer – we won't do code level 5, but we will do this…?'"	TV-CONS-SEC >> SD-- Avoiding or Mitigating RISK TV-SE-POW Profit
	Avoiding or Mitigating RISK for profit	DM-JUSTIFICATIONS	DM-JUSTIFICATIONS: PAYBACK AND MARKET DEBATE; MARKET-BASED FINANCIAL DRIVERS FOR BUYERS: 'Where/when sustainability pays back: market segment, what people want, willingness-to-pay'	INSTRUCTION, JUSTIFICATION: 'Proceed to appeal for Code 4; JUSTIFICATION: not achievable practically and financially; it's just uneconomical.' AR11-HFTH8	TV-SE-POWER+CONS-SEC >> SD- Financial Viability, Soundness TV-SE-POW Profit

NIL EFFECTS THROUGH FRAMING CHALLENGES

FOR THESE CLIENT VALUES (V-CL)	THESE FRAME TYPES (Ft-AR)	THESE FRAMES MAINTAIN OR INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
▪ **Meeting Targets; Getting it Built, On Time, On Budget** ▪ **Modern, Inclusive, (Sustainable) Facilities**	RESCUE BREEAM PROBLEMS	"The project was on site and we run into problems and we try to somehow rescue, achieve, get BREEAM points to achieve the BREEAM excellent."	Elicits LATE CLIENT ENGAGEMENT:
			HEAT PUMPS A MAINTENANCE PROBLEM: 'wwaaah, we don't want to be using that, ...we'll have nightmares with them'."
			SUGGESTIONS FOR WASTEWATER HEAT RECOVERY (WWHR): "what they were suggesting, lots of showers, hot water, goes down the drain, you take the heat from it and you recycle the heat. Great. Now they came out with this–that was their sugestion. Why on earth wasn't that introduced early doors?!?
			CHP VAST COST FOR REPAIR; NOT YOUR AVERAGE PLUMBER: "A CHP unit, every time they got someone out to repair it, it'd be a vast cost […] because it's not your normal plumber. […] I can get someone to do it, but are they going to do a good job?"
▪ **Fulfilling Statutory Requirements** ▪ **Trusting Our Advisors**	Cost savings	[…the original design was for an] east-facing building with a whole wall of glass. I probably wouldn't have done that..."	Kept the east glazed wall.
▪ **Lovely Family Home in the Country** ▪ **Traditional Appearance** ▪ **Traditional Country Lifestyle** ▪ **Old-fashioned, Conservative**	Modern design + sustainability approach for planning	DESIGN + SUSTAINABILITY APPROACH FOR COMPLIANCE: "we knew straight away it was going to be a nightmare... 'you can't just put a normal house there... you had to comply with PPS7 [Exemplary Design], EcoHouse standards, superduper all singing, all dancing, all bells and whistles sustainable.'"	Elicits disagreement, GOALS + OBJECTIVES: "'Oh, good grief, no, no, we're very, very old-fashioned. We want small windows, we want it to look like a house, we don't want it to look like a school or an office. Pitched roofs, we like dormers, we like twiddly [decorative] bits.'… on the one hand they were very traditional..."
		DESIGN CONCEPT (preconceptions) + JUSTIFICATION: MODERN STYLE FOR VIEWS AND LIGHT: "[Here's the] idea, looking down the hills, over a lake, beautiful, absolutely wonderful, prime view, good for light, massive vista windows, sliding doors…"	
▪ **Dream home, Sustainable lifestyle, Cost doesn't matter**	Challenge	Area costs the most money	INSTRUCTION: 'Increase the size' 'Submit application for planning consent with everything'

FOR THESE CLIENT VALUES (V-CL)	THESE FRAME TYPES (Ft-AR)	THESE FRAMES MAINTAIN OR INCREASE SUSTAINABILITY (F-AR)	HAD THESE EFFECTS ON DECISIONS / OUTCOMES (F-CL)
▪ **Cost Savings / Saving Money** ▪ **Creating a Dream Family Home** ▪ **Nature, Naturalistic Experience, Connection** ▪ **Sustainability & Sustainable Energy** ▪ **Sustainable Lifestyle**	Cost for Sustainability Measures	AR LATER CHALLENGE TO CL: "What about if we put a green roof on the garage because there was no PV there? …The client promised me that he would put a green roof on the garage because there was no PV there."	GREEN ROOF TOO COSTLY: “But when it came to it, he didn’t put them on, and I said ‘what about that’ …he grumbled ‘ah, well, its costly and… So, at that stage, the cost has come in more' "

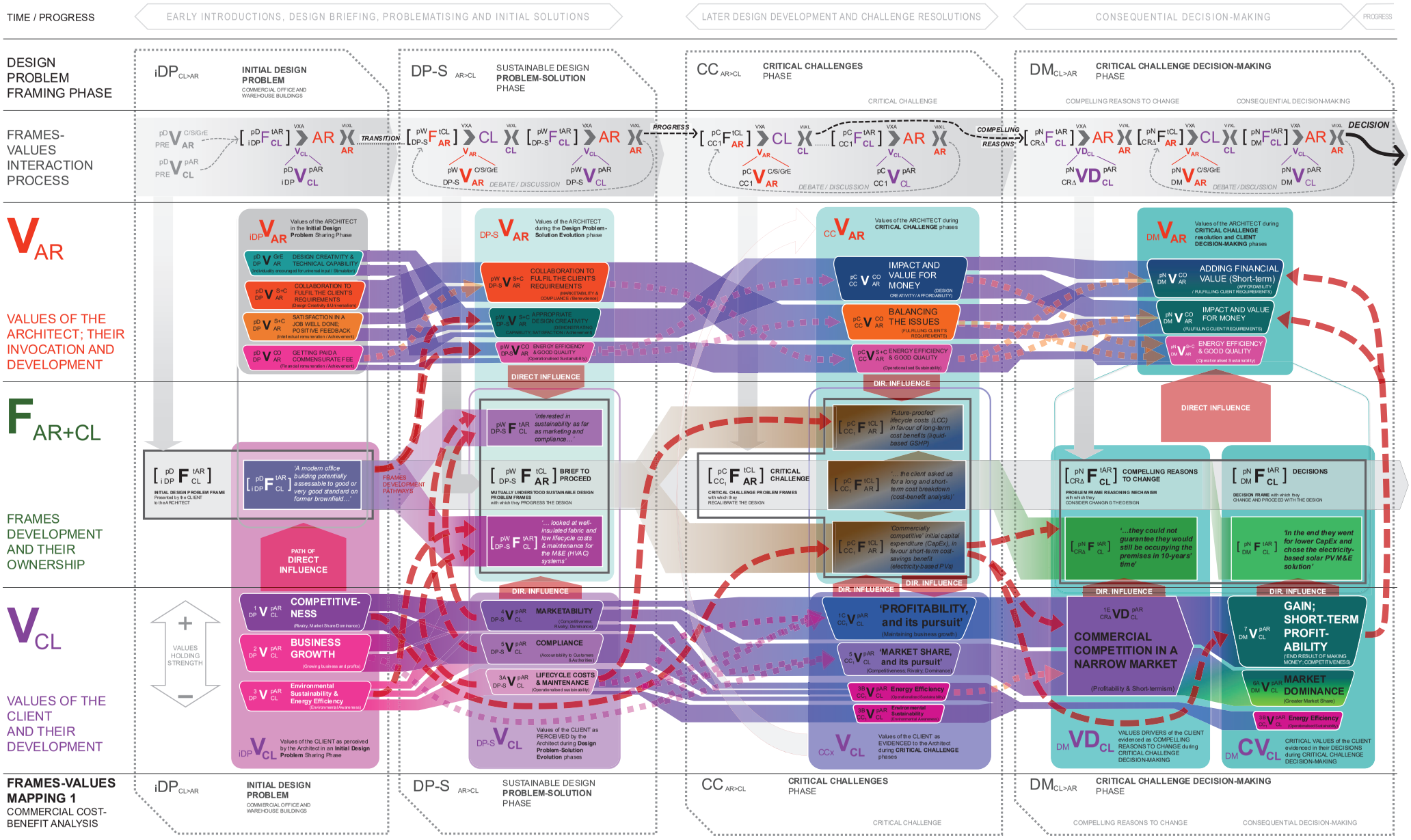
Appendix 6 Discussion Appendices

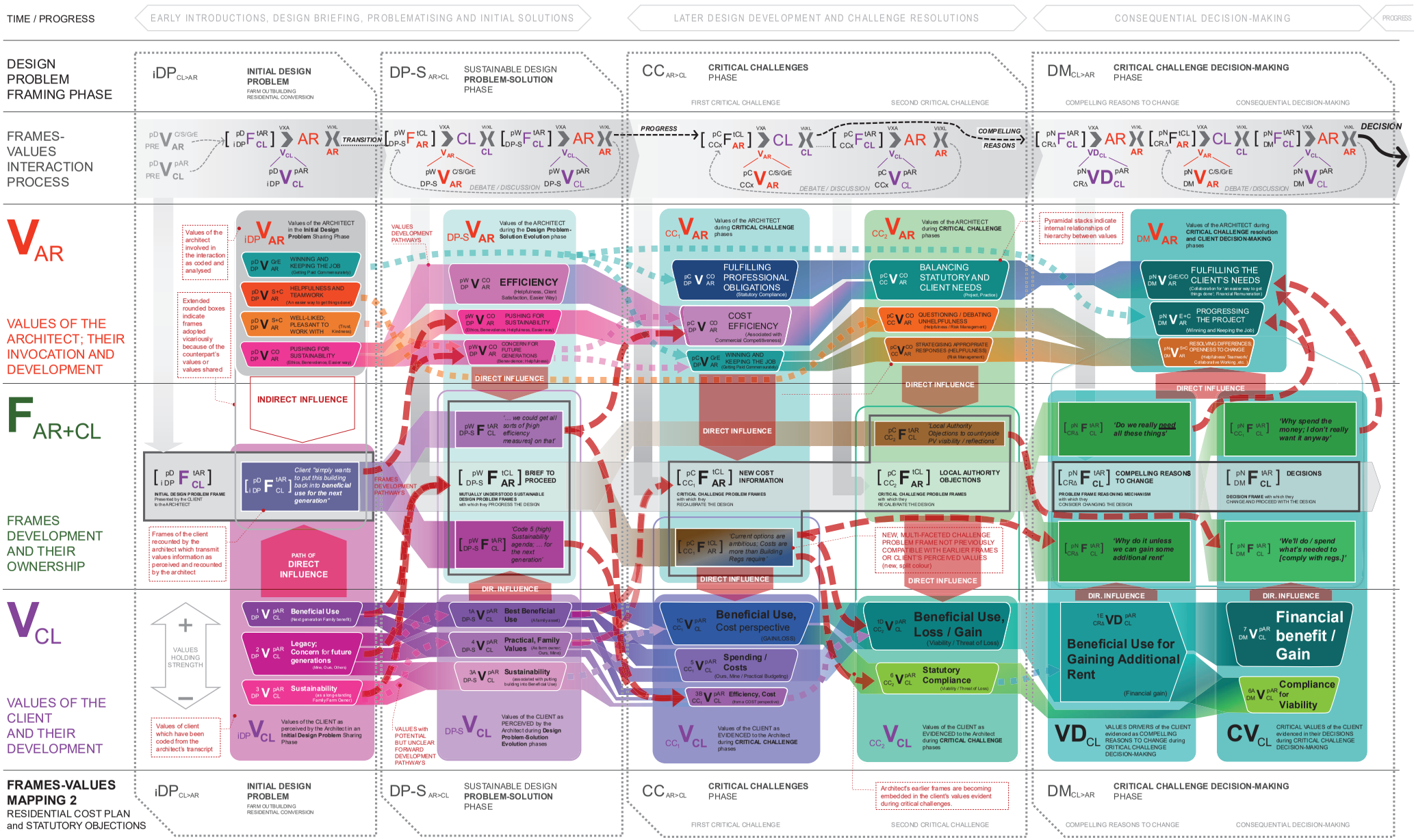
Contents

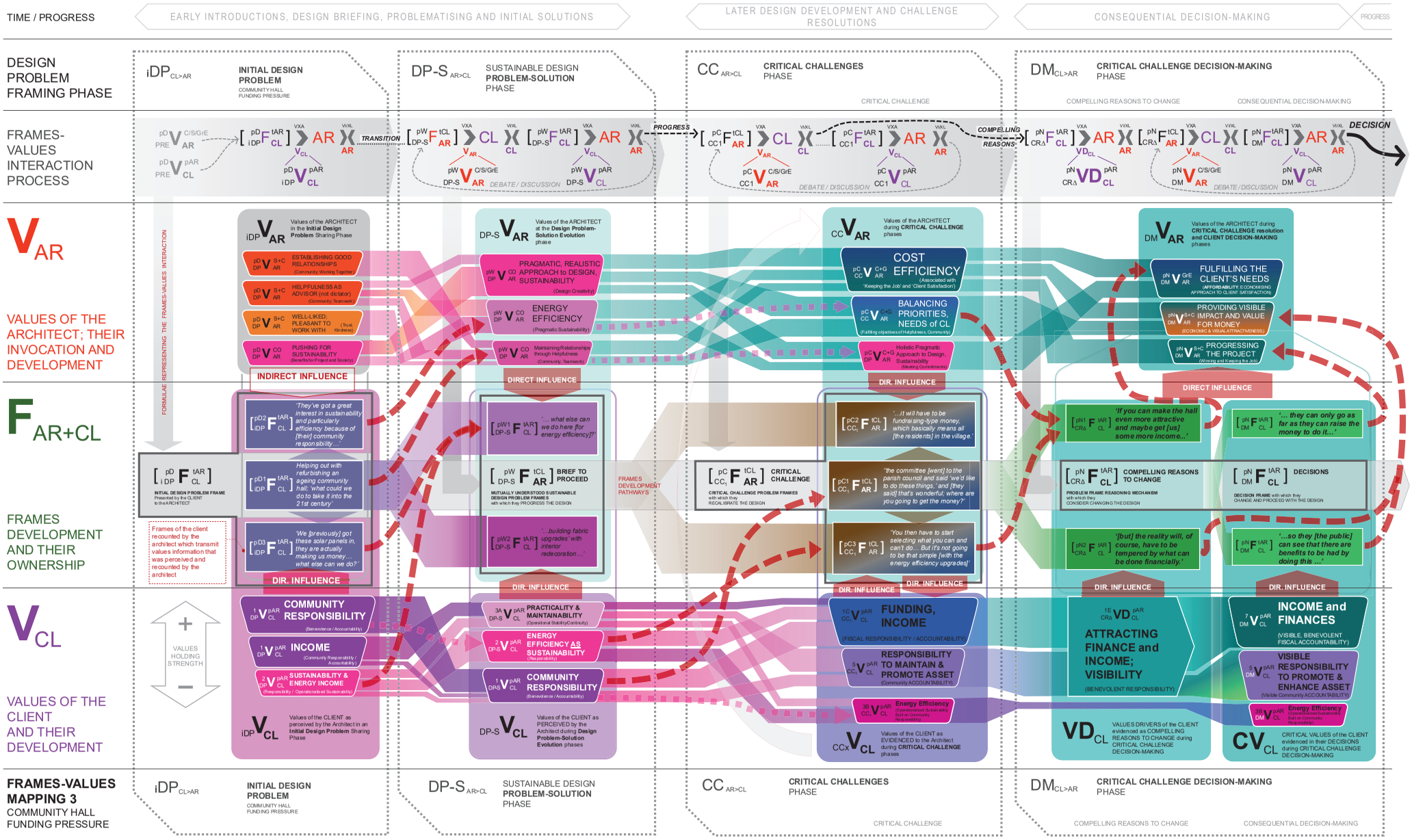
Appendix 6.1 Case-Maps

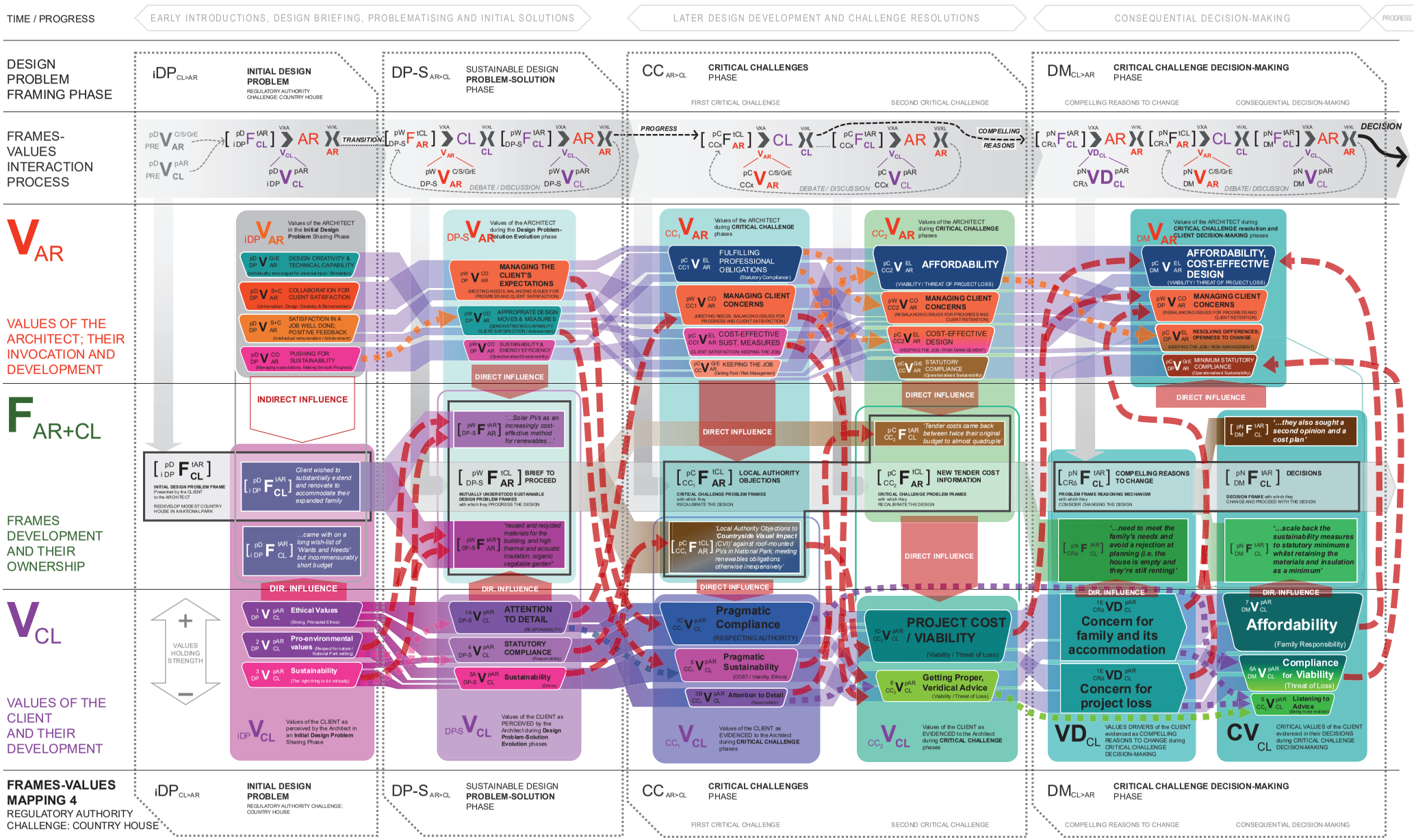
Contents

See pages below.


TIME / PROGRESS
EARLY INTRODUCTIONS, DESIGN BRIEFING, PROBLEMATISING AND INITIAL SOLUTIONS
LATER DESIGN DEVELOPMENT AND CHALLENGE RESOLUTIONS
CONSEQUENTIAL DECISION-MAKING
PROGRESS
DESIGN PROBLEM FRAMING PHASE
iDP CL>AR
INITIAL DESIGN PROBLEM
COMMERCIAL OFFICE AND WAREHOUSE BUILDINGS
DP-S AR>CL
SUSTAINABLE DESIGN PROBLEM-SOLUTION PHASE
CC AR>CL
CRITICAL CHALLENGES PHASE
CRITICAL CHALLENGE
DM CL>AR
CRITICAL CHALLENGE DECISION-MAKING PHASE
COMPELLING REASONS TO CHANGE
CONSEQUENTIAL DECISION-MAKING
FRAMES-VALUES INTERACTION PROCESS
TRANSITION
PROGRESS
COMPELLING REASONS
DECISION
DEBATE / DISCUSSION
VAR
VALUES OF THE ARCHITECT; THEIR INVOCATION AND DEVELOPMENT
Values of the ARCHITECT in the Initial Design Problem Sharing Phase
DESIGN CREATIVITY & TECHNICAL CAPABILITY
(Individuality encouraged for universal input / Stimulation)
COLLABORATION TO FULFIL THE CLIENT'S REQUIREMENTS
(Design Creativity &/Universalism)
SATISFACTION IN A JOB WELL DONE: POSITIVE FEEDBACK
(Intellectual remuneration / Achievement)
GETTING PAID A COMMENSURATE FEE
(Financial remuneration / Achievement)
Values of the ARCHITECT during the Design Problem-Solution Evolution phase
COLLABORATION TO FULFIL THE CLIENT'S REQUIREMENTS
(MARKETABILITY & COMPLIANCE / Benevolence)
APPROPRIATE DESIGN CREATIVITY
(DEMONSTRATING CAPABILITY, SATISFACTION / Achievement)
ENERGY EFFICIENCY & GOOD QUALITY
(Operationalised Sustainability)
Values of the ARCHITECT during CRITICAL CHALLENGE phases
IMPACT AND VALUE FOR MONEY
(DESIGN CREATIVITY / AFFORDABILITY)
BALANCING THE ISSUES
(FULFILLING CLIENT'S REQUIREMENTS)
ENERGY EFFICIENCY & GOOD QUALITY
(Operationalised Sustainability)
Values of the ARCHITECT during CRITICAL CHALLENGE resolution and CLIENT DECISION-MAKING phases
ADDING FINANCIAL VALUE (Short-term)
(AFFORDABILITY / FULFILLING CLIENT REQUIREMENTS)
IMPACT AND VALUE FOR MONEY
(FULFILLING CLIENT REQUIREMENTS)
ENERGY EFFICIENCY & GOOD QUALITY
(Operationalised Sustainability)
FAR+CL
FRAMES DEVELOPMENT AND THEIR OWNERSHIP
INITIAL DESIGN PROBLEM FRAME
Presented by the CLIENT to the ARCHITECT
'A modern office building potentially assessable to good or very good standard on former brownfield…'
FRAMES DEVELOPMENT PATHWAYS
PATH OF DIRECT INFLUENCE
DIRECT INFLUENCE
'interested in sustainability as far as marketing and compliance…'
BRIEF TO PROCEED
MUTUALLY UNDERSTOOD SUSTAINABLE DESIGN PROBLEM FRAMES
with which they PROGRESS THE DESIGN
'… looked at well-insulated fabric and low lifecycle costs & maintenance for the M&E (HVAC) systems'
DIR. INFLUENCE
CRITICAL CHALLENGE
CRITICAL CHALLENGE PROBLEM FRAMES
with which they REGALIBRATE THE DESIGN
'Future-proofed' lifecycle costs (LCC) in favour of long-term cost benefits (liquid-based GSHP)
'… the client asked us for a long and short-term cost breakdown (cost-benefit analysis)'
'Commercially competitive' initial capital expenditure (CapEx), in favour short-term cost-savings benefit (electricity-based PVs)
COMPELLING REASONS TO CHANGE
PROBLEM FRAME REASONING MECHANISM
with which they CONSIDER CHANGING THE DESIGN
'…they could not guarantee they would still be occupying the premises in 10-years' time'
DECISIONS
DECISION FRAME with which they CHANGE AND PROCEED WITH THE DESIGN
'In the end they went for lower CapEx and chose the electricity-based solar PV M&E solution'
VCL
VALUES OF THE CLIENT AND THEIR DEVELOPMENT
VALUES HOLDING STRENGTH
COMPETITIVE-NESS
(Rivalry, Market Share Dominance)
BUSINESS GROWTH
(Growing business and profits)
Environmental Sustainability & Energy Efficiency
(Environmental Awareness)
Values of the CLIENT as perceived by the Architect in an Initial Design Problem Sharing Phase
MARKETABILITY
(Competitiveness, Rivalry, Dominance)
COMPLIANCE
(Accountability to Customers & Authorities)
LIFECYCLE COSTS & MAINTENANCE
(Operationalised sustainability)
Values of the CLIENT as PERCEIVED by the Architect during Design Problem-Solution Evolution phases
'PROFITABILITY, and its pursuit'
(Maintaining business growth)
'MARKET SHARE, and its pursuit'
(Competitiveness, Rivalry, Dominance)
Energy Efficiency
(Operationalised Sustainability)
Environmental Sustainability
(Environmental Awareness)
Values of the CLIENT as EVIDENCED to the Architect during CRITICAL CHALLENGE phases
COMMERCIAL COMPETITION IN A NARROW MARKET
(Profitability & Short-termism)
VALUES DRIVERS of the CLIENT evidenced as COMPELLING REASONS TO CHANGE during CRITICAL CHALLENGE DECISION-MAKING
GAIN; SHORT-TERM PROFIT-ABILITY
('END RESULT OF MAKING MONEY; COMPETITIVENESS)
MARKET DOMINANCE
(Greater Market Share)
Energy Efficiency
(Operationalised Sustainability)
CRITICAL VALUES of the CLIENT evidenced in their DECISIONS during CRITICAL CHALLENGE DECISION-MAKING
FRAMES-VALUES MAPPING 1
COMMERCIAL COST-BENEFIT ANALYSIS


TIME / PROGRESS
EARLY INTRODUCTIONS, DESIGN BRIEFING, PROBLEMATISING AND INITIAL SOLUTIONS
LATER DESIGN DEVELOPMENT AND CHALLENGE RESOLUTIONS
CONSEQUENTIAL DECISION-MAKING
PROGRESS
DESIGN PROBLEM FRAMING PHASE
iDP CL>AR INITIAL DESIGN PROBLEM
FARM OUTBUILDING RESIDENTIAL CONVERSION
DP-S AR>CL SUSTAINABLE DESIGN PROBLEM-SOLUTION PHASE
CC AR>CL CRITICAL CHALLENGES PHASE
FIRST CRITICAL CHALLENGE
SECOND CRITICAL CHALLENGE
DM CL>AR CRITICAL CHALLENGE DECISION-MAKING PHASE
COMPELLING REASONS TO CHANGE
CONSEQUENTIAL DECISION-MAKING
FRAMES-VALUES INTERACTION PROCESS
TRANSITION
PROGRESS
COMPELLING REASONS
DECISION
DEBATE / DISCUSSION
V AR
VALUES OF THE ARCHITECT; THEIR INVOCATION AND DEVELOPMENT
Values of the architect involved in the interaction as coded and analysed
Extended rounded boxes indicate frames adopted vicariously because of the counterpart's values or values shared
Values of the ARCHITECT in the Initial Design Problem Sharing Phase
WINNING AND KEEPING THE JOB (Getting Paid; Commensurately)
HELPFULNESS AND TEAMWORK (An easier way to get things done)
WELL-LIKED; PLEASANT TO WORK WITH (Trust; Kindness)
PUSHING FOR SUSTAINABILITY (Ethos; Benevolence; Easier way)
INDIRECT INFLUENCE
VALUES DEVELOPMENT PATHWAYS
Values of the ARCHITECT during the Design Problem-Solution Evolution phase
EFFICIENCY (Helpfulness; Client Satisfaction, Easier Way)
PUSHING FOR SUSTAINABILITY (Ethos; Benevolence; Helpfulness; Easier way)
CONCERN FOR FUTURE GENERATIONS (Benevolence; Helpfulness)
DIRECT INFLUENCE
Values of the ARCHITECT during CRITICAL CHALLENGE phases
FULFILLING PROFESSIONAL OBLIGATIONS (Statutory Compliance)
COST EFFICIENCY (Associated with Commercial Competitiveness)
WINNING AND KEEPING THE JOB (Getting Paid; Commensurately)
DIRECT INFLUENCE
Values of the ARCHITECT during CRITICAL CHALLENGE phases
BALANCING STATUTORY AND CLIENT NEEDS (Project, Practice)
QUESTIONING / DEBATING UNHELPFULNESS (Helpfulness / Risk Management)
STRATEGISING APPROPRIATE RESPONSES (HELPFULNESS) (Risk Management)
DIRECT INFLUENCE
Pyramidal stacks indicate internal relationships of hierarchy between values
Values of the ARCHITECT during CRITICAL CHALLENGE resolution and CLIENT DECISION-MAKING phases
FULFILLING THE CLIENT'S NEEDS (Collaboration for 'an easier way to get things done'; Financial Remuneration)
PROGRESSING THE PROJECT (Winning and Keeping the Job)
RESOLVING DIFFERENCES OPENNESS TO CHANGE (Helpfulness/ Teamwork/ Collaborative Working ..etc.)
DIRECT INFLUENCE
F AR+CL
FRAMES DEVELOPMENT AND THEIR OWNERSHIP
INITIAL DESIGN PROBLEM FRAME Presented by the CLIENT to the ARCHITECT
Client "simply wants to put this building back into beneficial use for the next generation"
FRAMES DEVELOPMENT PATHWAYS
'... we could get all sorts of (high) efficiency measures] on that'
BRIEF TO PROCEED
MUTUALLY UNDERSTOOD SUSTAINABLE DESIGN PROBLEM FRAMES with which they PROGRESS THE DESIGN
'Code 5 (high) Sustainability agenda; ... for the next generation'
DIR. INFLUENCE
'Local Authority Objections to countryside PV visibility / reflections'
NEW COST INFORMATION
CRITICAL CHALLENGE PROBLEM FRAMES with which they RECALIBRATE THE DESIGN
'Current options are ambitious; Costs are more than Building Regs require'
LOCAL AUTHORITY OBJECTIONS
CRITICAL CHALLENGE PROBLEM FRAMES with which they RECALIBRATE THE DESIGN
NEW, MULTI-FACETED CHALLENGE PROBLEM FRAME NOT PREVIOUSLY COMPATIBLE WITH EARLIER FRAMES OR CLIENT'S PERCEIVED VALUES (new, split colour)
DIRECT INFLUENCE
'Do we really need all these things'
'Why spend the money; I don't really want it anyway'
COMPELLING REASONS TO CHANGE
PROBLEM FRAME REASONING MECHANISM with which they CONSIDER CHANGING THE DESIGN
DECISIONS
DECISION FRAME with which they CHANGE AND PROCEED WITH THE DESIGN
'Why do it unless we can gain some additional rent'
'We'll do / spend what's needed to [comply with regs.]'
DIR. INFLUENCE
DIR. INFLUENCE
Frames of the client recounted by the architect which transmit values information as perceived and recounted by the architect
PATH OF DIRECT INFLUENCE
V CL
VALUES OF THE CLIENT AND THEIR DEVELOPMENT
VALUES HOLDING STRENGTH
+
−
Values of client which have been coded from the architect's transcript
Beneficial Use (Next generation Family benefit)
Legacy; Concern for future generations (Mine; Ours; Others)
Sustainability (as a long-standing Family Farm Owner)
Values of the CLIENT as perceived by the Architect in an Initial Design Problem Sharing Phase
VALUES WITH POTENTIAL BUT UNCLEAR FORWARD DEVELOPMENT PATHWAYS
Best Beneficial Use (A family asset)
Practical, Family Values (As farm owner; Ours, Mine)
Sustainability (associated with putting building into Beneficial Use)
Values of the CLIENT as PERCEIVED by the Architect during Design Problem-Solution Evolution phases
Beneficial Use, Cost perspective (GAIN/LOSS)
Spending / Costs (Ours ; Mine / Practical Budgeting)
Efficiency, Cost (from a COST perspective)
Values of the CLIENT as EVIDENCED to the Architect during CRITICAL CHALLENGE phases
Beneficial Use, Loss / Gain (Viability / Threat of Loss)
Statutory Compliance (Viability / Threat of Loss)
Values of the CLIENT as EVIDENCED to the Architect during CRITICAL CHALLENGE phases
Beneficial Use for Gaining Additional Rent (Financial gain)
Financial benefit / Gain
Compliance for Viability
VD CL VALUES DRIVERS of the CLIENT evidenced as COMPELLING REASONS TO CHANGE during CRITICAL CHALLENGE DECISION-MAKING
CV CL CRITICAL VALUES of the CLIENT evidenced in their DECISIONS during CRITICAL CHALLENGE DECISION-MAKING
Architect's earlier frames are becoming embedded in the client's values evident during critical challenges.
FRAMES-VALUES MAPPING 2
RESIDENTIAL COST PLAN and STATUTORY OBJECTIONS
iDP CL>AR INITIAL DESIGN PROBLEM
FARM OUTBUILDING RESIDENTIAL CONVERSION
DP-S AR>CL SUSTAINABLE DESIGN PROBLEM-SOLUTION PHASE
CC AR>CL CRITICAL CHALLENGES PHASE
FIRST CRITICAL CHALLENGE
SECOND CRITICAL CHALLENGE
DM CL>AR CRITICAL CHALLENGE DECISION-MAKING PHASE
COMPELLING REASONS TO CHANGE
CONSEQUENTIAL DECISION-MAKING


TIME / PROGRESS
EARLY INTRODUCTIONS, DESIGN BRIEFING, PROBLEMATISING AND INITIAL SOLUTIONS
LATER DESIGN DEVELOPMENT AND CHALLENGE RESOLUTIONS
CONSEQUENTIAL DECISION-MAKING
PROGRESS
DESIGN PROBLEM FRAMING PHASE
FRAMES-VALUES INTERACTION PROCESS
VAR
VALUES OF THE ARCHITECT; THEIR INVOCATION AND DEVELOPMENT
FAR+CL
FRAMES DEVELOPMENT AND THEIR OWNERSHIP
VCL
VALUES OF THE CLIENT AND THEIR DEVELOPMENT
FRAMES-VALUES MAPPING 3
COMMUNITY HALL FUNDING PRESSURE
iDPCL>AR
INITIAL DESIGN PROBLEM
COMMUNITY HALL FUNDING PRESSURE
DP-SAR>CL
SUSTAINABLE DESIGN PROBLEM-SOLUTION PHASE
CCAR>CL
CRITICAL CHALLENGES PHASE
CRITICAL CHALLENGE
DMCL>AR
CRITICAL CHALLENGE DECISION-MAKING PHASE
COMPELLING REASONS TO CHANGE
CONSEQUENTIAL DECISION-MAKING
TRANSITION
PROGRESS
COMPELLING REASONS
DECISION
DEBATE / DISCUSSION
FORMULAE REPRESENTING THE FRAMES-VALUES INTERACTION
INDIRECT INFLUENCE
DIRECT INFLUENCE
DIR. INFLUENCE
FRAMES DEVELOPMENT PATHWAYS
Values of the ARCHITECT in the Initial Design Problem Sharing Phase
Values of the ARCHITECT at the Design Problem-Solution Evolution phase
Values of the ARCHITECT during CRITICAL CHALLENGE phases
Values of the ARCHITECT during CRITICAL CHALLENGE resolution and CLIENT DECISION-MAKING phases
ESTABLISHING GOOD RELATIONSHIPS (Community, Working Together)
HELPFULNESS AS ADVISOR (not dictator) (Community, Teamwork)
WELL-LIKED; PLEASANT TO WORK WITH (Trust, Kindness)
PUSHING FOR SUSTAINABILITY (Benefits for Project and Society)
PRAGMATIC, REALISTIC APPROACH to DESIGN, SUSTAINABILITY (Design Creativity)
ENERGY EFFICIENCY (Pragmatic Sustainability)
Maintaining Relationships through Helpfulness (Community, Teamwork)
COST EFFICIENCY (Associated with 'Keeping the Job' and 'Client Satisfaction')
BALANCING PRIORITIES, NEEDS of CL (Fulfilling objectives of Helpfulness, Community)
Holistic Pragmatic Approach to Design Sustainability (Meeting Commitments)
FULFILLING THE CLIENT'S NEEDS (AFFORDABILITY, ECONOMISING APPROACH TO CLIENT SATISFACTION)
PROVIDING VISIBLE IMPACT AND VALUE FOR MONEY (ECONOMIC & VISUAL ATTRACTIVENESS)
PROGRESSING THE PROJECT (Winning and Keeping the Job)
'They've got a great interest in sustainability and particularly efficiency because of [their] community responsibility…'
'Helping out with refurbishing an ageing community hall; 'what could we do to take it into the 21st century'
'We [previously] got these solar panels in, they are actually making us money … what else can we do?'
'… what else can we do here [for energy efficiency]?'
BRIEF TO PROCEED
'…building fabric upgrades' with interior redecoration…'
'…it will have to be fundraising-type money, which basically means all [the residents] in the village.'
'the committee [went] to the parish council and said 'we'd like to do these things,' and [they said] that's wonderful; where are you going to get the money?'
'You then have to start selecting what you can and can't do… But it's not going to be that simple [with the energy efficiency upgrades]'
'If you can make the hall even more attractive and maybe get [us] some more income…'
'… they can only go as far as they can raise the money to do it…'
COMPELLING REASONS TO CHANGE
DECISIONS
'[but] the reality will, of course, have to be tempered by what can be done financially.'
'…so they [the public] can see that there are benefits to be had by doing this …'
INITIAL DESIGN PROBLEM FRAME
Presented by the CLIENT to the ARCHITECT
CRITICAL CHALLENGE PROBLEM FRAMES with which they RECALIBRATE THE DESIGN
MUTUALLY UNDERSTOOD SUSTAINABLE DESIGN PROBLEM FRAMES with which they PROGRESS THE DESIGN
PROBLEM FRAME REASONING MECHANISM with which they CONSIDER CHANGING THE DESIGN
DECISION FRAME with which they CHANGE AND PROCEED WITH THE DESIGN
Frames of the client recounted by the architect which transmit values information that was perceived and recounted by the architect
VALUES HOLDING STRENGTH
+
−
COMMUNITY RESPONSIBILITY (Benevolence / Accountability)
INCOME (Community Responsibility / Accountability)
SUSTAINABILITY & ENERGY INCOME (Responsibility / Operationalised Sustainability)
PRACTICALITY & MAINTAINABILITY (Operational Stability/Continuity)
ENERGY EFFICIENCY AS SUSTAINABILITY (Responsibility)
COMMUNITY RESPONSIBILITY (Benevolence / Accountability)
FUNDING, INCOME (FISCAL RESPONSIBILITY / ACCOUNTABILITY)
RESPONSIBILITY TO MAINTAIN & PROMOTE ASSET (Community ACCOUNTABILITY)
Energy Efficiency (Operationalised Sustainability Built on Community Responsibility)
ATTRACTING FINANCE and INCOME; VISIBILITY (BENEVOLENT RESPONSIBILITY)
INCOME and FINANCES (VISIBLE, BENEVOLENT FISCAL ACCOUNTABILITY)
VISIBLE RESPONSIBILITY TO PROMOTE & ENHANCE ASSET (Visible Community ACCOUNTABILITY)
Energy Efficiency (Operationalised Sustainability Built on Community Responsibility)
Values of the CLIENT as perceived by the Architect in an Initial Design Problem Sharing Phase
Values of the CLIENT as PERCEIVED by the Architect during Design Problem-Solution Evolution phases
Values of the CLIENT as EVIDENCED to the Architect during CRITICAL CHALLENGE phases
VALUES DRIVERS of the CLIENT evidenced as COMPELLING REASONS TO CHANGE during CRITICAL CHALLENGE DECISION-MAKING
CRITICAL VALUES of the CLIENT evidenced in their DECISIONS during CRITICAL CHALLENGE DECISION-MAKING


TIME / PROGRESS
EARLY INTRODUCTIONS, DESIGN BRIEFING, PROBLEMATISING AND INITIAL SOLUTIONS
LATER DESIGN DEVELOPMENT AND CHALLENGE RESOLUTIONS
CONSEQUENTIAL DECISION-MAKING
PROGRESS
DESIGN PROBLEM FRAMING PHASE
iDP CL>AR INITIAL DESIGN PROBLEM
REGULATORY AUTHORITY CHALLENGE: COUNTRY HOUSE
DP-S AR>CL SUSTAINABLE DESIGN PROBLEM-SOLUTION PHASE
CC AR>CL CRITICAL CHALLENGES PHASE
FIRST CRITICAL CHALLENGE
SECOND CRITICAL CHALLENGE
DM CL>AR CRITICAL CHALLENGE DECISION-MAKING PHASE
COMPELLING REASONS TO CHANGE
CONSEQUENTIAL DECISION-MAKING
FRAMES-VALUES INTERACTION PROCESS
TRANSITION
PROGRESS
COMPELLING REASONS
DECISION
DEBATE / DISCUSSION
V AR
VALUES OF THE ARCHITECT; THEIR INVOCATION AND DEVELOPMENT
Values of the ARCHITECT in the Initial Design Problem Sharing Phase
Values of the ARCHITECT during the Design Problem-Solution Evolution phase
Values of the ARCHITECT during CRITICAL CHALLENGE phases
Values of the ARCHITECT during CRITICAL CHALLENGE resolution and CLIENT DECISION-MAKING phases
DESIGN CREATIVITY & TECHNICAL CAPABILITY
COLLABORATION FOR CLIENT SATISFACTION
SATISFACTION IN A JOB WELL DONE; POSITIVE FEEDBACK
PUSHING FOR SUSTAINABILITY
MANAGING THE CLIENT'S EXPECTATIONS
APPROPRIATE DESIGN MOVES & MEASURES
SUSTAINABILITY & ENERGY EFFICIENCY
FULFILLING PROFESSIONAL OBLIGATIONS
MANAGING CLIENT CONCERNS
COST-EFFECTIVE SUST. MEASURES
KEEPING THE JOB
AFFORDABILITY
MANAGING CLIENT CONCERNS
COST-EFFECTIVE DESIGN
STATUTORY COMPLIANCE
AFFORDABILITY, COST-EFFECTIVE DESIGN
MANAGING CLIENT CONCERNS
RESOLVING DIFFERENCES; OPENNESS TO CHANGE
MINIMUM STATUTORY COMPLIANCE
INDIRECT INFLUENCE
DIRECT INFLUENCE
F AR+CL
FRAMES DEVELOPMENT AND THEIR OWNERSHIP
INITIAL DESIGN PROBLEM FRAME
Presented by the CLIENT to the ARCHITECT
REDEVELOP MODEST COUNTRY HOUSE IN A NATIONAL PARK
Client wished to substantially extend and renovate to accommodate their expanded family
...came with on a long wish-list of 'Wants and Needs' but incommensurably short budget
'...Solar PVs as an increasingly cost-effective method for renewables...'
BRIEF TO PROCEED
MUTUALLY UNDERSTOOD SUSTAINABLE DESIGN PROBLEM FRAMES with which they PROGRESS THE DESIGN
"reused and recycled materials for the building and high thermal and acoustic insulation; organic vegetable garden"
LOCAL AUTHORITY OBJECTIONS
CRITICAL CHALLENGE PROBLEM FRAMES with which they RECALIBRATE THE DESIGN
'Local Authority Objections to 'Countryside Visual Impact (CVI)' against roof-mounted PVs in National Park meeting renewables obligations otherwise inexpensively'
'Tender costs came back between twice their original budget to almost quadruple'
NEW TENDER COST INFORMATION
CRITICAL CHALLENGE PROBLEM FRAMES with which they RECALIBRATE THE DESIGN
'...they also sought a second opinion and a cost plan'
COMPELLING REASONS TO CHANGE
PROBLEM FRAME REASONING MECHANISM with which they CONSIDER CHANGING THE DESIGN
'...need to meet the family's needs and avoid a rejection at planning (i.e. the house is empty and they're still renting)'
DECISIONS
DECISION FRAME with which they CHANGE AND PROCEED WITH THE DESIGN
'...scale back the sustainability measures to statutory minimums whilst retaining the materials and insulation as a minimum'
V CL
VALUES OF THE CLIENT AND THEIR DEVELOPMENT
VALUES HOLDING STRENGTH
+
−
DIR. INFLUENCE
Ethical Values
(Strong, Principled Ethics)
Pro-environmental values
(Respect for nature / National Park setting)
Sustainability
(The 'right thing to do' ethically)
ATTENTION TO DETAIL
(IC SPONSIBILITY)
STATUTORY COMPLIANCE
(Responsibility)
Sustainability
(Ethics)
Pragmatic Compliance
(RESPECTING AUTHORITY)
Pragmatic Sustainability
(COST / Viability, Ethics)
Attention to Detail
(Responsibility)
PROJECT COST / VIABILITY
(Viability / Threat of Loss)
Getting Proper, Veridical Advice
(Viability / Threat of Loss)
Concern for family and its accommodation
Concern for project loss
Affordability
(Family Responsibility)
Compliance for Viability
(Threat of Loss)
Listening to Advice
(Being more realistic)
Values of the CLIENT as perceived by the Architect in an Initial Design Problem Sharing Phase
Values of the CLIENT as PERCEIVED by the Architect during Design Problem-Solution Evolution phases
Values of the CLIENT as EVIDENCED to the Architect during CRITICAL CHALLENGE phases
Values of the CLIENT as EVIDENCED to the Architect during CRITICAL CHALLENGE phases
VALUES DRIVERS of the CLIENT evidenced as COMPELLING REASONS TO CHANGE during CRITICAL CHALLENGE DECISION-MAKING
CRITICAL VALUES of the CLIENT evidenced in their DECISIONS during CRITICAL CHALLENGE DECISION-MAKING
FRAMES-VALUES MAPPING 4
REGULATORY AUTHORITY CHALLENGE: COUNTRY HOUSE
iDP CL>AR INITIAL DESIGN PROBLEM
REGULATORY AUTHORITY CHALLENGE: COUNTRY HOUSE
DP-S AR>CL SUSTAINABLE DESIGN PROBLEM-SOLUTION PHASE
CC AR>CL CRITICAL CHALLENGES PHASE
FIRST CRITICAL CHALLENGE
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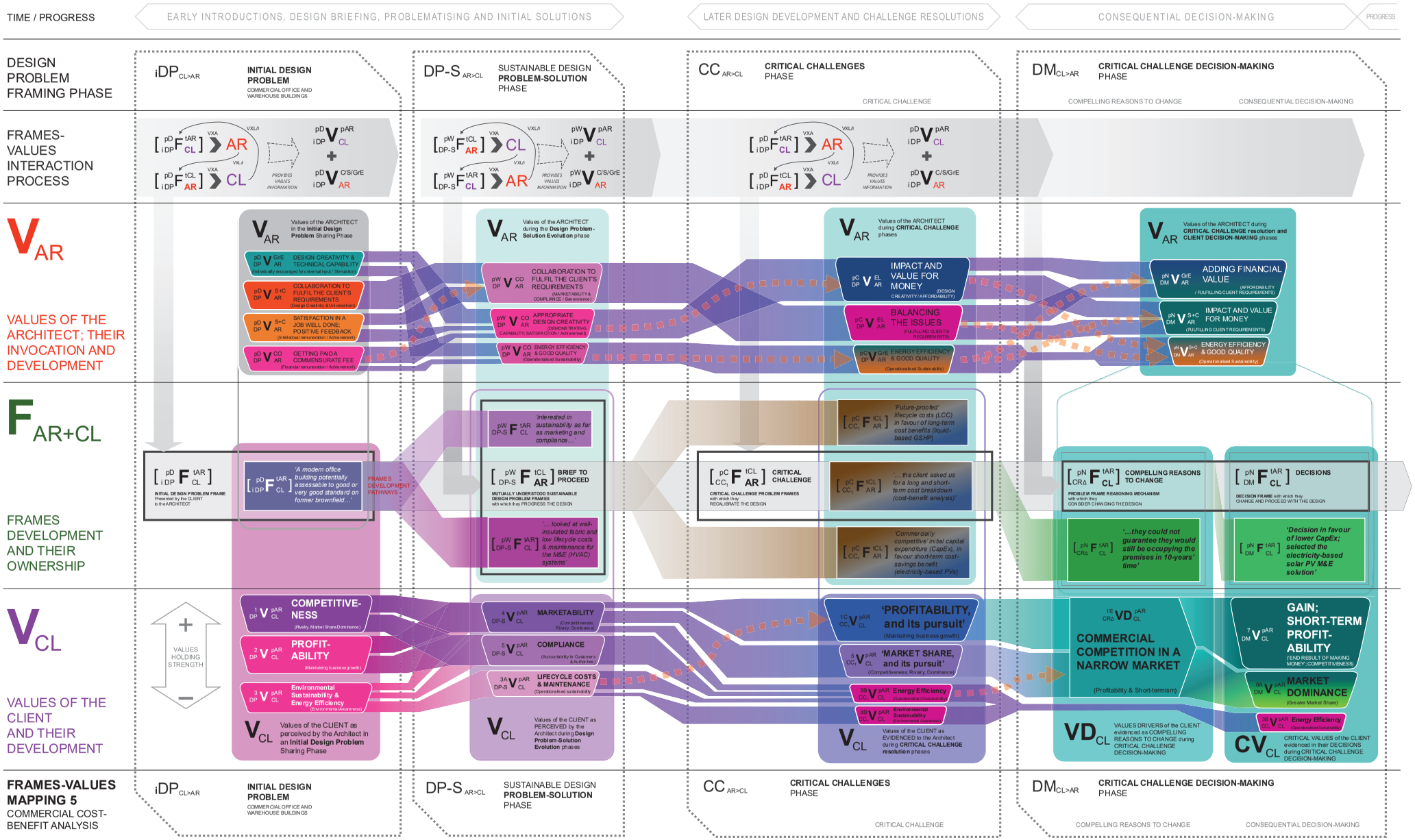
COMPELLING REASONS TO CHANGE
CONSEQUENTIAL DECISION-MAKING


TIME / PROGRESS
EARLY INTRODUCTIONS, DESIGN BRIEFING, PROBLEMATISING AND INITIAL SOLUTIONS
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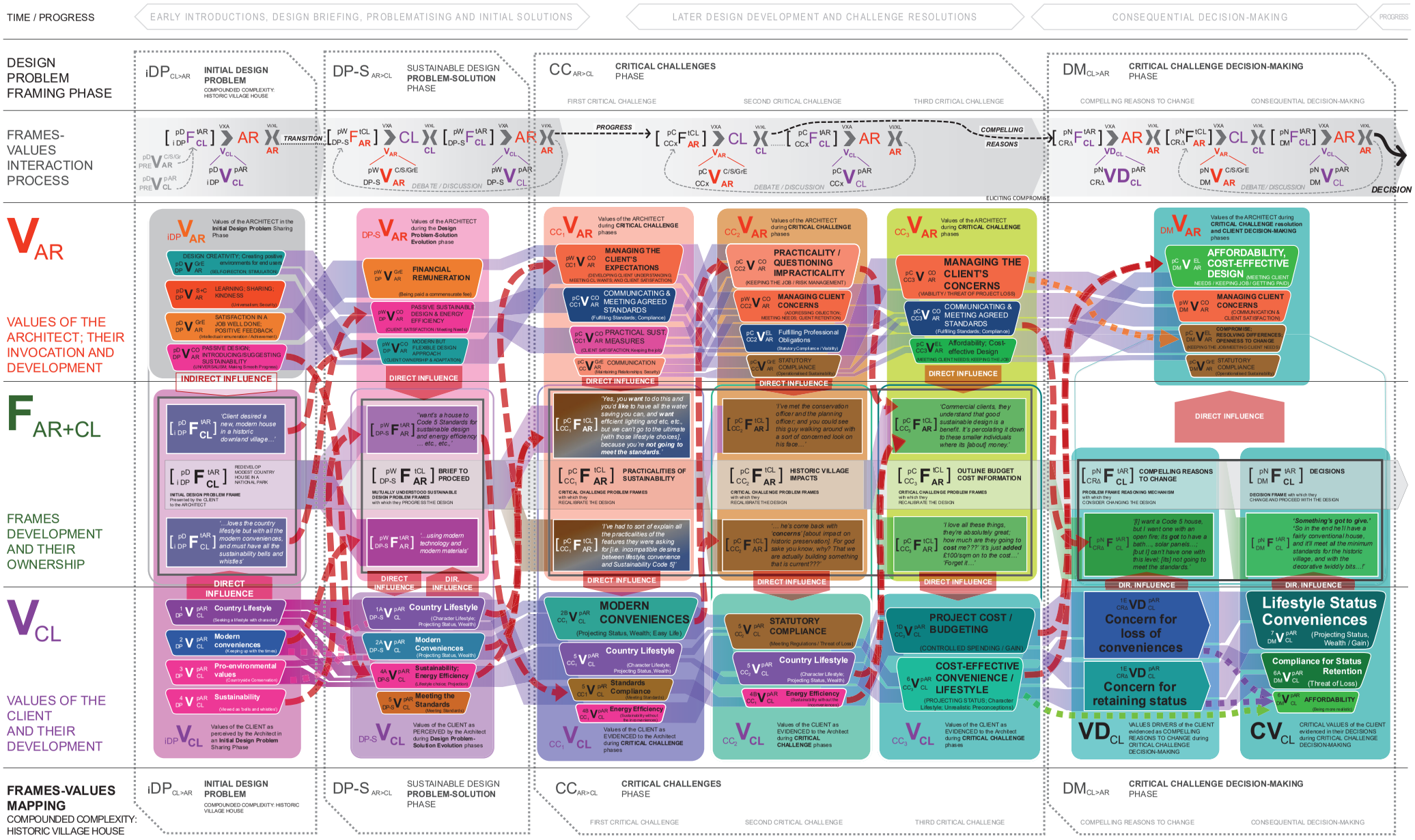
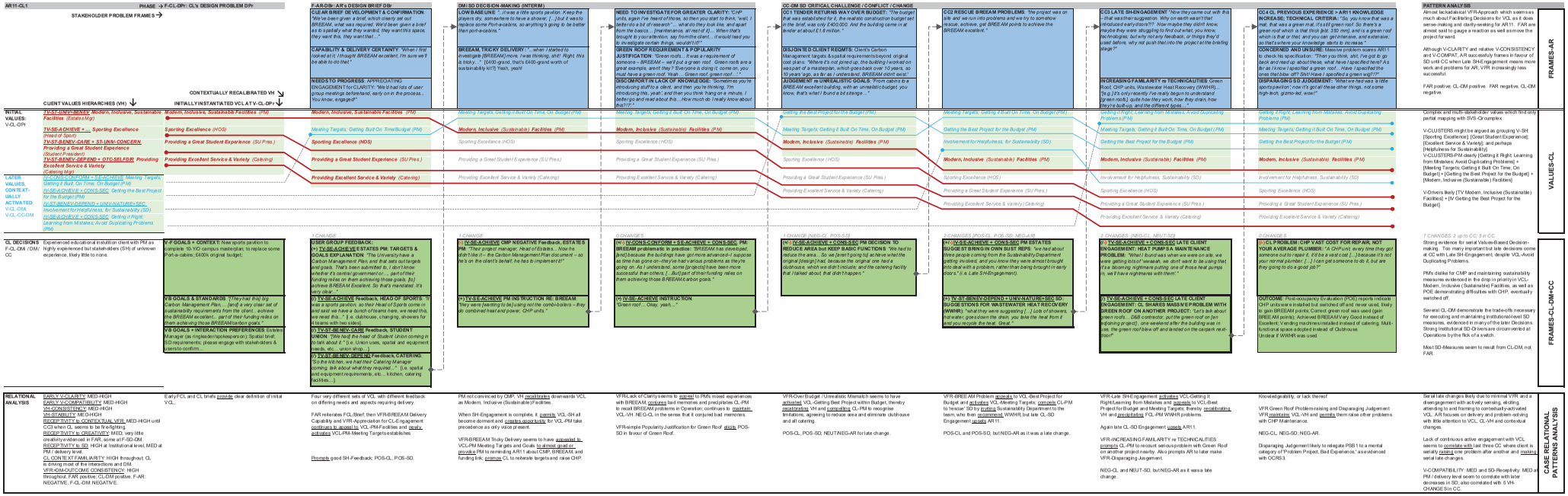
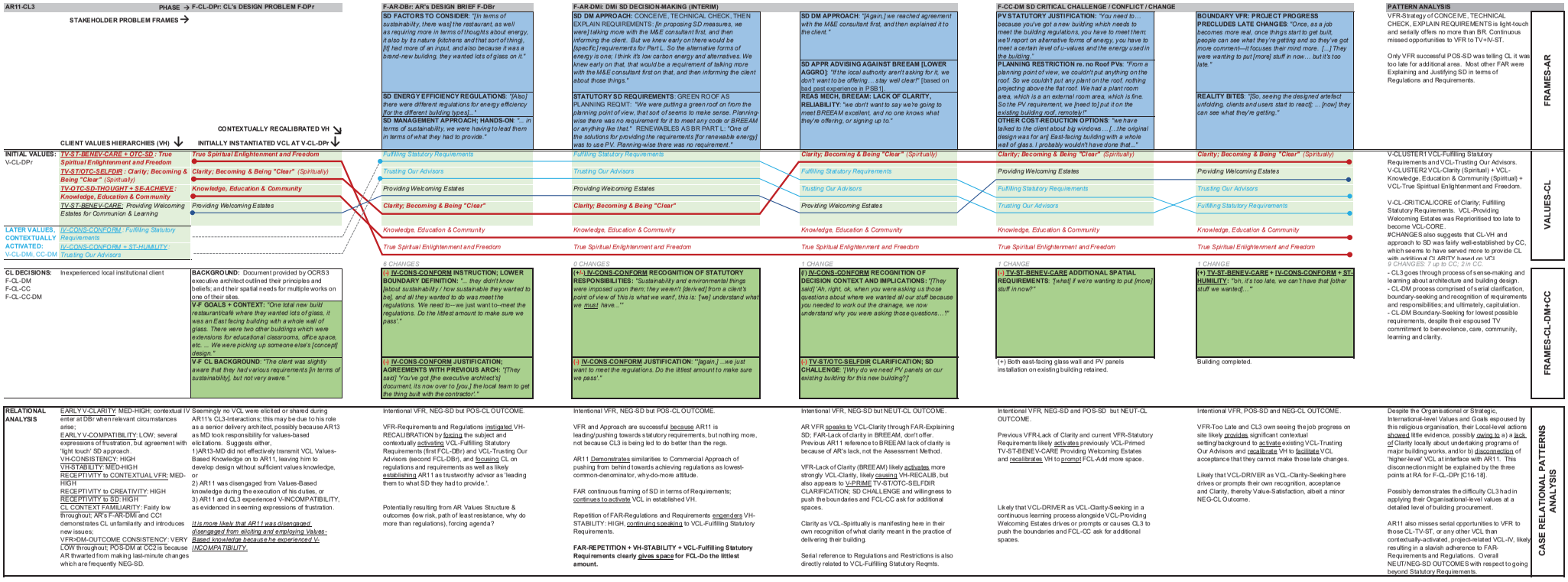
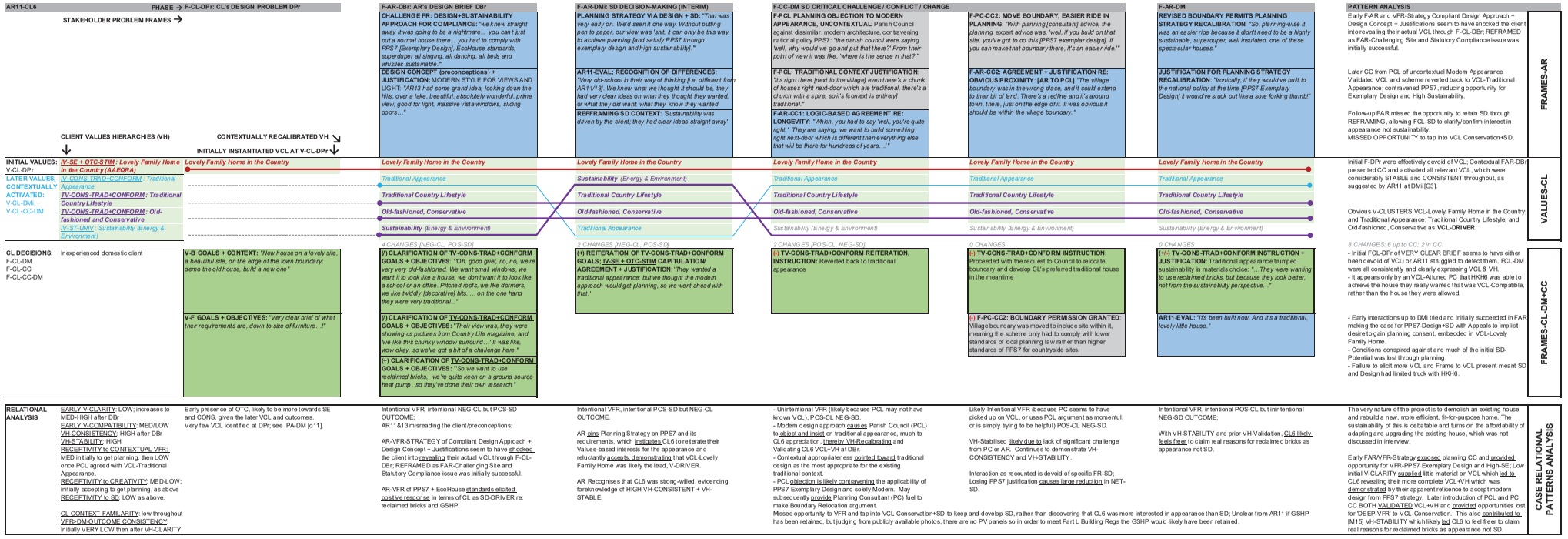
CONSEQUENTIAL DECISION-MAKING
PROGRESS
DESIGN PROBLEM FRAMING PHASE
iDP CL>AR
INITIAL DESIGN PROBLEM
COMMERCIAL OFFICE AND WAREHOUSE BUILDINGS
DP-S AR>CL
SUSTAINABLE DESIGN PROBLEM-SOLUTION PHASE
CC AR>CL
CRITICAL CHALLENGES PHASE
CRITICAL CHALLENGE
DM CL>AR
CRITICAL CHALLENGE DECISION-MAKING PHASE
COMPELLING REASONS TO CHANGE
CONSEQUENTIAL DECISION-MAKING
FRAMES-VALUES INTERACTION PROCESS
PROVIDES VALUES INFORMATION
V AR
VALUES OF THE ARCHITECT; THEIR INVOCATION AND DEVELOPMENT
Values of the ARCHITECT in the Initial Design Problem Sharing Phase
DESIGN CREATIVITY & TECHNICAL CAPABILITY
(Individually encouraged for universal input / Stimulation)
COLLABORATION TO FULFIL THE CLIENT'S REQUIREMENTS
(Design Creativity & Universalism)
SATISFACTION IN A JOB WELL DONE; POSITIVE FEEDBACK
(Intellectual remuneration / Achievement)
GETTING PAID A COMMENSURATE FEE
(Financial remuneration / Achievement)
Values of the ARCHITECT during the Design Problem-Solution Evolution phase
COLLABORATION TO FULFIL THE CLIENT'S REQUIREMENTS
(MARKETABILITY & COMPLIANCE / Benevolence)
APPROPRIATE DESIGN CREATIVITY
(DEMONSTRATING CAPABILITY; SATISFACTION / Achievement)
ENERGY EFFICIENCY & GOOD QUALITY
(Operationalised Sustainability)
Values of the ARCHITECT during CRITICAL CHALLENGE phases
IMPACT AND VALUE FOR MONEY
(DESIGN CREATIVITY / AFFORDABILITY)
BALANCING THE ISSUES
(FULFILLING CLIENT'S REQUIREMENTS)
ENERGY EFFICIENCY & GOOD QUALITY
(Operationalised Sustainability)
Values of the ARCHITECT during CRITICAL CHALLENGE resolution and CLIENT DECISION-MAKING phases
ADDING FINANCIAL VALUE
(AFFORDABILITY / FULFILLING CLIENT REQUIREMENTS)
IMPACT AND VALUE FOR MONEY
(FULFILLING CLIENT REQUIREMENTS)
ENERGY EFFICIENCY & GOOD QUALITY
(Operationalised Sustainability)
F AR+CL
FRAMES DEVELOPMENT AND THEIR OWNERSHIP
INITIAL DESIGN PROBLEM FRAME
Presented by the CLIENT to the ARCHITECT
'A modern office building potentially assessable to good or very good standard on former brownfield…'
FRAMES DEVELOPMENT PATHWAYS
'interested in sustainability as far as marketing and compliance…'
BRIEF TO PROCEED
MUTUALLY UNDERSTOOD SUSTAINABLE DESIGN PROBLEM FRAMES
with which they PROGRESS THE DESIGN
'… looked at well-insulated fabric and low lifecycle costs & maintenance for the M&E (HVAC) systems'
'Future-proofed' lifecycle costs (LCC) in favour of long-term cost benefits (liquid-based GSHP)
CRITICAL CHALLENGE
CRITICAL CHALLENGE PROBLEM FRAMES
with which they RECALIBRATE THE DESIGN
'… the client asked us for a long and short-term cost breakdown (cost-benefit analysis)'
'Commercially competitive' initial capital expenditure (CapEx), in favour short-term cost-savings benefit (electricity-based PVs)
COMPELLING REASONS TO CHANGE
PROBLEM FRAME REASONING MECHANISM
with which they CONSIDER CHANGING THE DESIGN
'…they could not guarantee they would still be occupying the premises in 10-years' time'
DECISIONS
DECISION FRAME with which they CHANGE AND PROCEED WITH THE DESIGN
'Decision in favour of lower CapEx; selected the electricity-based solar PV M&E solution'
V CL
VALUES OF THE CLIENT AND THEIR DEVELOPMENT
VALUES HOLDING STRENGTH
COMPETITIVE-NESS
(Rivalry, Market Share Dominance)
PROFIT-ABILITY
(Maintaining business growth)
Environmental Sustainability & Energy Efficiency
(Environmental Awareness)
Values of the CLIENT as perceived by the Architect in an Initial Design Problem Sharing Phase
MARKETABILITY
(Competitiveness; Rivalry; Dominance)
COMPLIANCE
(Accountability to Customers & Authorities)
LIFECYCLE COSTS & MAINTENANCE
(Operationalised sustainability)
Values of the CLIENT as PERCEIVED by the Architect during Design Problem-Solution Evolution phases
'PROFITABILITY, and its pursuit'
(Maintaining business growth)
'MARKET SHARE, and its pursuit'
(Competitiveness; Rivalry; Dominance)
Energy Efficiency
(Operationalised Sustainability)
Environmental Sustainability
(Environmental Awareness)
Values of the CLIENT as EVIDENCED to the Architect during CRITICAL CHALLENGE resolution phases
COMMERCIAL COMPETITION IN A NARROW MARKET
(Profitability & Short-termism)
VD CL
VALUES DRIVERS of the CLIENT evidenced as COMPELLING REASONS TO CHANGE during CRITICAL CHALLENGE DECISION-MAKING
GAIN; SHORT-TERM PROFIT-ABILITY
('END RESULT OF MAKING MONEY'; COMPETITIVENESS)
MARKET DOMINANCE
(Greater Market Share)
Energy Efficiency
(Operationalised Sustainability)
CV CL
CRITICAL VALUES of the CLIENT evidenced in their DECISIONS during CRITICAL CHALLENGE DECISION-MAKING
FRAMES-VALUES MAPPING 5
COMMERCIAL COST-BENEFIT ANALYSIS

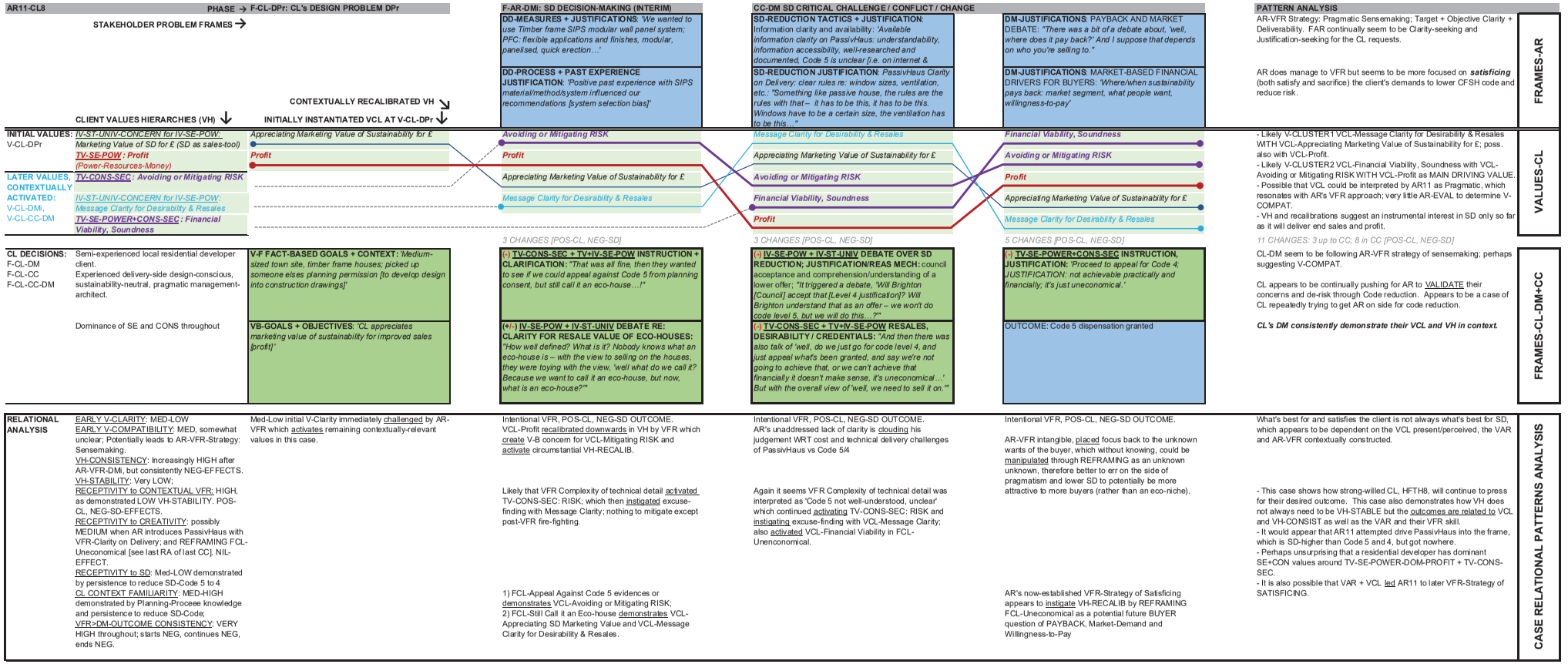

TIME / PROGRESS
EARLY INTRODUCTIONS, DESIGN BRIEFING, PROBLEMATISING AND INITIAL SOLUTIONS
LATER DESIGN DEVELOPMENT AND CHALLENGE RESOLUTIONS
CONSEQUENTIAL DECISION-MAKING
PROGRESS
DESIGN PROBLEM FRAMING PHASE
iDP CL>AR INITIAL DESIGN PROBLEM
COMPOUNDED COMPLEXITY: HISTORIC VILLAGE HOUSE
DP-S AR>CL SUSTAINABLE DESIGN PROBLEM-SOLUTION PHASE
CC AR>CL CRITICAL CHALLENGES PHASE
FIRST CRITICAL CHALLENGE
SECOND CRITICAL CHALLENGE
THIRD CRITICAL CHALLENGE
DM CL>AR CRITICAL CHALLENGE DECISION-MAKING PHASE
COMPELLING REASONS TO CHANGE
CONSEQUENTIAL DECISION-MAKING
FRAMES-VALUES INTERACTION PROCESS
TRANSITION
PROGRESS
COMPELLING REASONS
DEBATE / DISCUSSION
ELICITING COMPROMISE
DECISION
V AR
VALUES OF THE ARCHITECT; THEIR INVOCATION AND DEVELOPMENT
Values of the ARCHITECT in the Initial Design Problem Sharing Phase
DESIGN CREATIVITY; Creating positive environments for end users (SELF-DIRECTION; STIMULATION)
LEARNING; SHARING; KINDNESS (Universalism; Security)
SATISFACTION IN A JOB WELL DONE; POSITIVE FEEDBACK (Intellectual/remuneration / Achievement)
PASSIVE DESIGN; INTRODUCING/SUGGESTING SUSTAINABILITY (UNIVERSALISM; Making Smooth Progress)
Values of the ARCHITECT during the Design Problem-Solution Evolution phase
FINANCIAL REMUNERATION (Being paid a commensurate fee)
PASSIVE SUSTAINABLE DESIGN & ENERGY EFFICIENCY (CLIENT SATISFACTION / Meeting Needs)
MODERN BUT FLEXIBLE DESIGN APPROACH (CLIENT OWNERSHIP & ADAPTATION)
Values of the ARCHITECT during CRITICAL CHALLENGE phases
MANAGING THE CLIENT'S EXPECTATIONS (DEVELOPING CLIENT UNDERSTANDING; MEETING CL WANTS; AND CLIENT SATISFACTION)
COMMUNICATING & MEETING AGREED STANDARDS (Fulfilling Standards; Compliance)
PRACTICAL SUST MEASURES (CLIENT SATISFACTION; Keeping the job)
COMMUNICATION (Maintaining Relationships; Security)
PRACTICALITY / QUESTIONING IMPRACTICALITY (KEEPING THE JOB / RISK MANAGEMENT)
MANAGING CLIENT CONCERNS (ADDRESSING OBJECTION; MEETING NEEDS; CLIENT RETENTION)
Fulfilling Professional Obligations (Statutory Compliance / Viability)
STATUTORY COMPLIANCE (Operational Sustainability)
MANAGING THE CLIENT'S CONCERNS (VIABILITY / THREAT OF PROJECT LOSS)
COMMUNICATING & MEETING AGREED STANDARDS (Fulfilling Standards; Compliance)
Affordability; Cost-effective Design (MEETING CLIENT NEEDS; KEEPING THE JOB)
STATUTORY COMPLIANCE (Operational Sustainability)
Values of the ARCHITECT during CRITICAL CHALLENGE resolution and CLIENT DECISION-MAKING phases
AFFORDABILITY, COST-EFFECTIVE DESIGN (MEETING CLIENT NEEDS / KEEPING JOB / GETTING PAID)
MANAGING CLIENT CONCERNS (COMMUNICATION & CLIENT SATISFACTION)
COMPROMISE; RESOLVING DIFFERENCES; OPENNESS TO CHANGE (KEEPING THE JOB/MEETING CLIENT NEEDS)
STATUTORY COMPLIANCE (Operational Sustainability)
INDIRECT INFLUENCE
DIRECT INFLUENCE
F AR+CL
FRAMES DEVELOPMENT AND THEIR OWNERSHIP
'Client desired a new, modern house in a historic downland village…'
REDEVELOP MODEST COUNTRY HOUSE IN A NATIONAL PARK
INITIAL DESIGN PROBLEM FRAME Presented by the CLIENT to the ARCHITECT
'…loves the country lifestyle but with all the modern conveniences, and must have all the sustainability bells and whistles'
'went's a house to Code 5 Standards for sustainable design and energy efficiency … etc., etc.,'
BRIEF TO PROCEED
MUTUALLY UNDERSTOOD SUSTAINABLE DESIGN PROBLEM FRAMES with which they PROCEED TO THE DESIGN
'…using modern technology and modern materials'
'Yes, you want to do this and you'd like to have all the water saving you can, and want efficient lighting and etc. etc., but we can't go to the ultimate [with those lifestyle choices], because you're not going to meet the standards.'
PRACTICALITIES OF SUSTAINABILITY
CRITICAL CHALLENGE PROBLEM FRAMES with which they RECALIBRATE THE DESIGN
'I've had to sort of explain all the practicalities of the features they were asking for [i.e. incompatible desires between lifestyle, convenience and Sustainability Code 5]'
'I've met the conservation officer and the planning officer; and you could see this guy walking around with a sort of concerned look on his face…'
HISTORIC VILLAGE IMPACTS
'…he's come back with concerns [about impact on historic preservation]. For god sake you know, why? That we are actually building something that is current???'
'Commercial clients, they understand that good sustainable design is a benefit; it's percolating it down to these smaller individuals where its [about] money.'
OUTLINE BUDGET COST INFORMATION
'I love all these things, they're absolutely great; how much are they going to cost me??? 'It's just added £100/sqm on to the cost…' 'Forget it…'
COMPELLING REASONS TO CHANGE
PROBLEM FRAME REASONING MECHANISM with which they CONSIDER CHANGING THE DESIGN
'[I] want a Code 5 house, but I want one with an open fire; it's got to have a bath … solar panels…; [but I] can't have one with this level; [its] not going to meet the standards.'
DECISIONS
DECISION FRAME with which they CHANGE AND PROCEED WITH THE DESIGN
'Something's got to give.' 'So in the end he'll have a fairly conventional house, and it'll meet all the minimum standards for the historic village, and with the decorative twiddly bits…'
DIR. INFLUENCE
V CL
VALUES OF THE CLIENT AND THEIR DEVELOPMENT
Values of the CLIENT as perceived by the Architect in an Initial Design Problem Sharing Phase
Country Lifestyle (Seeking a lifestyle with character)
Modern conveniences (Keeping up with the times)
Pro-environmental values (Countryside Conservation)
Sustainability (Viewed as 'bells and whistles')
Values of the CLIENT as PERCEIVED by the Architect during Design Problem-Solution Evolution phases
Country Lifestyle (Character Lifestyle; Projecting Status, Wealth)
Modern Conveniences (Projecting Status, Wealth)
Sustainability; Energy Efficiency (Lifestyle choice; Projecting)
Meeting the Standards (Meeting Standards)
Values of the CLIENT as EVIDENCED to the Architect during CRITICAL CHALLENGE phases
MODERN CONVENIENCES (Projecting Status, Wealth; Easy Life)
Country Lifestyle (Character Lifestyle; Projecting Status, Wealth)
Standards Compliance (Meeting Standards)
Energy Efficiency (Sustainability without the inconveniences)
STATUTORY COMPLIANCE (Meeting Regulations / Threat of Loss)
Country Lifestyle (Character Lifestyle; Projecting Status, Wealth)
Energy Efficiency (Sustainability without the inconveniences)
PROJECT COST / BUDGETING (CONTROLLED SPENDING / GAIN)
COST-EFFECTIVE CONVENIENCE / LIFESTYLE (PROJECTING STATUS; Character Lifestyle; Unrealistic Preconceptions)
Concern for loss of conveniences
Concern for retaining status
Lifestyle Status Conveniences (Projecting Status, Wealth / Gain)
Compliance for Status Retention (Threat of Loss)
AFFORDABILITY (Being more realistic)
VALUES DRIVERS of the CLIENT evidenced as COMPELLING REASONS TO CHANGE during CRITICAL CHALLENGE DECISION-MAKING
CRITICAL VALUES of the CLIENT evidenced in their DECISIONS during CRITICAL CHALLENGE DECISION-MAKING
FRAMES-VALUES MAPPING
COMPOUNDED COMPLEXITY: HISTORIC VILLAGE HOUSE

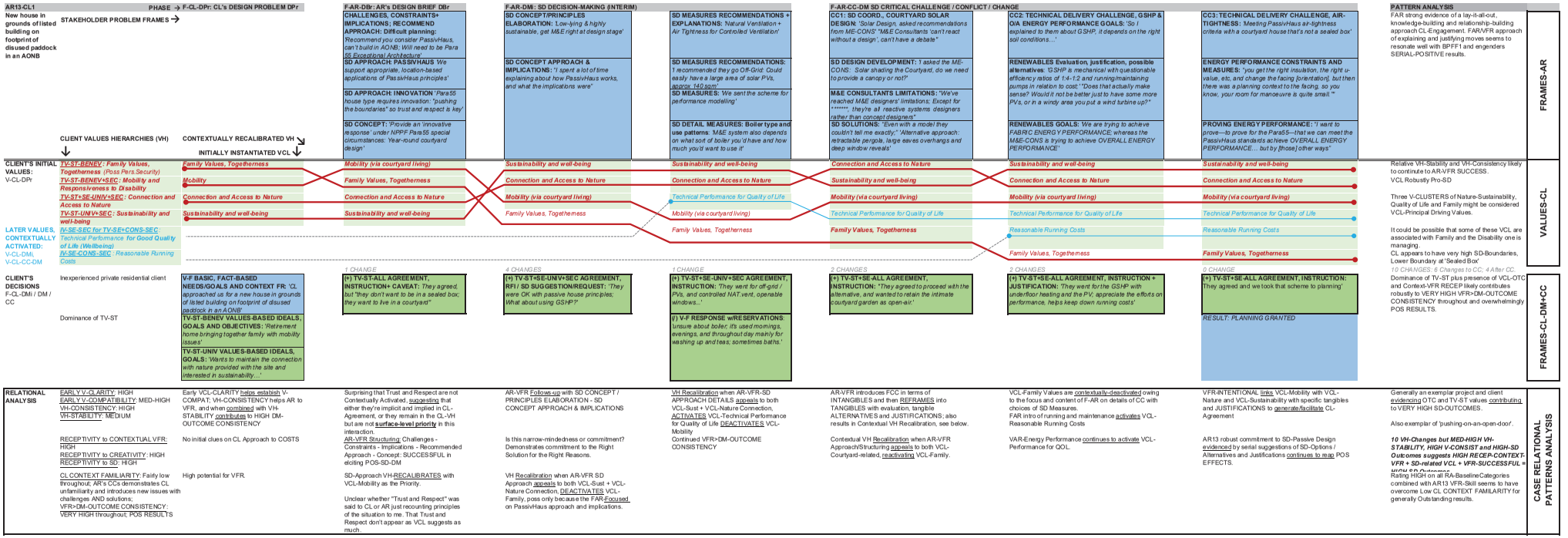
	BRIEF / INITIAL DESIGN PROBLEM	PRELIM DECISIONS / PROBLEM-SOLUTION	INTERIM DECISIONS / CRITICAL CHALLENGE 1	INTERIM DECISIONS / CRITICAL CHALLENGE 2	INTERIM DECISIONS / CRITICAL CHALLENGE 3	FINAL DECISIONS
ARCHITECT VALUES STATEMENTS (V_{AR}) →	Winning and Keeping the Job Helpfulness and Teamwork Well-Liked; Pleasant to Work With Pushing for Sustainability	Sustainability and Energy Efficiency Pushing for Sustainability Concern for Future Generations	Fulfilling Professional Obligations (Statutory Compliance) Cost Efficiency Keeping the Job (Getting Paid Commensurately)	Fulfilling Professional Obligations (Statutory Compliance) Cost Efficiency Keeping the Job (Getting Paid Commensurately)	Balancing Statutory and Client Needs Questioning / Debating Unhelpfulness (Helpfulness / Risk Management) Strategising Appropriate Responses (Helpfulness) (Risk Management) Keeping the Job (Getting paid commensurately)	Balancing Statutory and Client Needs Questioning / Debating Unhelpfulness… Strategising Appropriate Responses, Helpfulness… Keeping the Job…
ARCHITECT'S PROBLEM FRAMES (F_{AR}) →	*FAR0: '[Hello, how can we help?]'*	FAR1: "Now we could get all sorts of solar panels on that, it's big enough to have a GSHP in the garden area because it's basically backing on to fields, we can have wood-chip boilers, we can have underfloor heating, we've got reasonably big windows without being overly big, … and we will have a lot of insulation and upgrading of the fabric."	FAR2: "…came up with a good set of options for her to think about… trying to get to Code 5, which is probably a bit ambitious, but let's give it a go."	FQS1: 'Current options are ambitious; 'Costs are more than Building Regs require'	FLA1: local Authority Objections to countryside PV visibility / reflections FAR3: "the planners didn't particularly like the idea of having solar panels on the roof because it was in the countryside and so on. … they didn't think that was particularly in keeping… Actually it faces sort of southwest, we could make use of this."	FAR4: "...well actually where is your sustainability agenda going??"
CLIENT VALUES (V_{CL}) Activated in each convo ↓						
Beneficial Use (As a family asset)	1					
Best Beneficial Use (As a family asset)		1	1	3		
Best Beneficial Use *from the Cost perspective* (GAIN/LOSS)			2	2		
Financial benefit / Gain (Beneficial Use to Gain Additional Rent)						1
Legacy; Concern for future generations (Mine, Ours)	2	2				
Family Values (As farm owner; Ours, Mine)	3					
Practical, Family Values (As farm owner; Ours, Mine)		3	3	4		
Sustainability (as a long-standing Family Farm Owner)	4					
Sustainability (Associated with putting building into Beneficial Use)		4				
Spending / Costs (Ours, Mine / Practical Budgeting)			4	1		
Cost Efficiency, Spending / Costs (Ours, Mine / Practical Budgeting)						2
Statutory Compliance (Viability / Threat of Loss)				5	2	3
Viability / Threat of Loss (Beneficial Use, Loss / Gain)					1	
CLIENT'S DECISION FRAMES (FCL) →	FCL1: "it's her farm, and she's an individual who's got a very long family history of owning the land, and simply wants to put this building back into beneficial use for the next generation […]; she won't sell; it will remain part of the estate." FCL1: "[put in] a planning application in for a single house which is largely converted from an existing brick-built farm building from the 1880's"	FCL2: "the client seemed quite keen on all that..." FCL3: "…until she had a QS do a budget"	FCL4: And she said "well oh, yes, well, all these things are all very nice, and we can probably put a wood chip boiler in, because I can give you a storage building next door to put it in, and store the wood chips and so on, but I don't really need all this."	FCL5: [AR] "there seemed to be a goodwill until the pound sign popped up, and then it was [FCL6] 'well do we really need these things?' [AR] You know, nobody can make you do it… [FCL7] 'well in that case we won't'."	FCL8: ...and the client says 'well I don't really want it anyway' you've sort of lost the battle. So we'll have high levels of insulation, we'll have underfloor heating, probably a woodchip boiler; I don't think we'll have a GSHP, obviously you don't need everything, and we'll probably end up with a reasonably conventional house design in services, although hopefully it will be well enough insulated that the underfloor heating will only need a bit of odd top-up here and there...	FCL9: "...unless there's some particularly compelling reason, like she could get another £1000/mo. in rent, why spend the money? But she'll go so far; you know, the initial enthusiasm waned."
FRAME-VALUE COMPATIBILITY - TRIGGER/DRIVER →	High Frame-Value compatibility - gain	Medium Frame-Value compatibility - gain	Medium Frame-Value in/compatibility - cost	Medium Frame-Value incompatibility - cost, viability	High Frame-Value incompatibility - conflict, threat of loss	High Frame-Value incompatibility - conflict, gain/cost

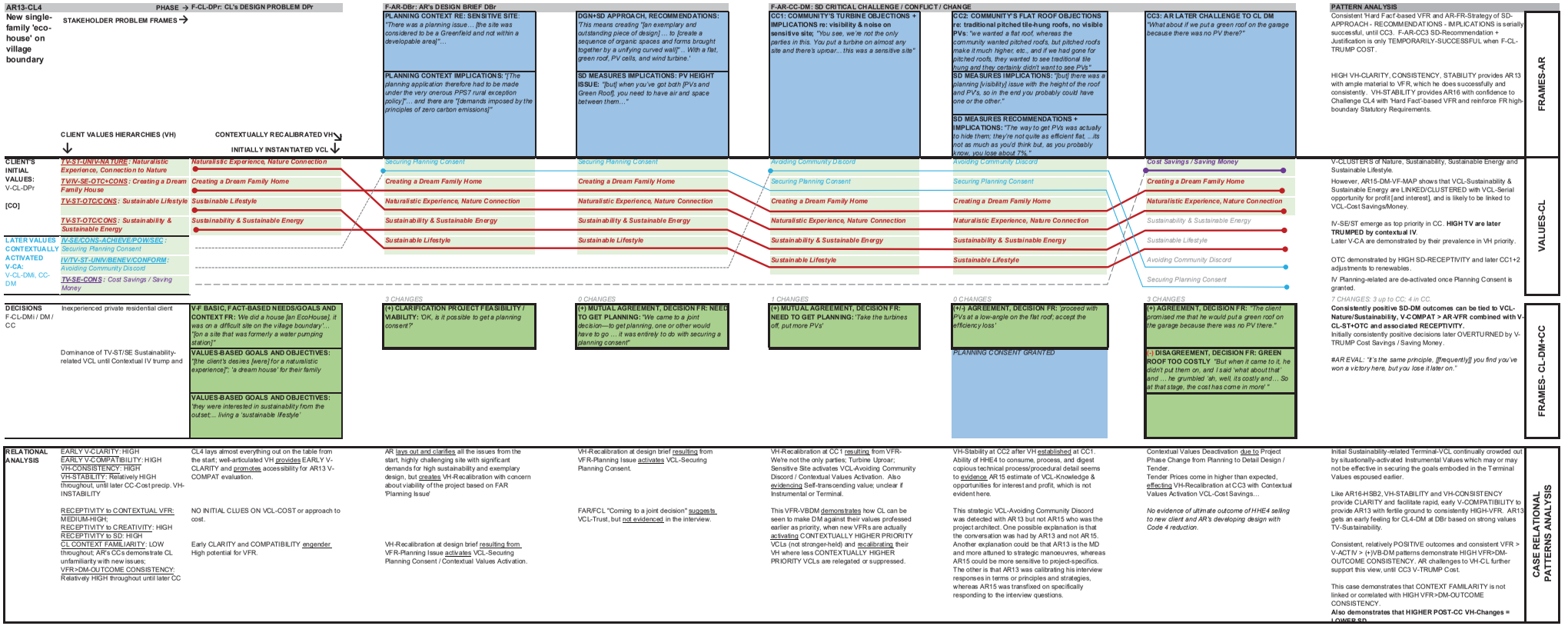

AR11-CL1
PHASE → F-CL-DPr: CL's DESIGN PROBLEM DPr
STAKEHOLDER PROBLEM FRAMES →
CONTEXTUALLY RECALIBRATED VH ↘
CLIENT VALUES HIERARCHIES (VH) ↓
INITALLY INSTANTIATED VC LATV-CL-DPr ↘
F-AR-DBr: AR's DESIGN BRIEF DBr
DM/ SD DECISION-MAKING (INTERIM)
CC-DM SD CRITICAL CHALLENGE / CONFLICT / CHANGE
PATTERN ANALYSIS
FRAMES-AR
VALUES-CL
FRAMES-CL-DM+CC
CASE RELATIONAL PATTERNS ANALYSIS
INITIAL VALUES: V-CL-DPr
LATER VALUES, CONTEXTUALLY ACTIVATED: V-CL-DM, V-CL-CCDM
CL DECISIONS
RELATIONAL ANALYSIS


AR11-CL3
PHASE → F-CL-DPr: CL's DESIGN PROBLEM F-DPr
STAKEHOLDER PROBLEM FRAMES →
CONTEXTUALLY RECALIBRATED VH ↘
CLIENT VALUES HIERARCHIES (VH) ↓
INITIALLY INSTANTIATED VCL AT V-CL-DPr ↓
F-AR-DBr: AR's DESIGN BRIEF F-DBr
F-AR-DMi: DMi SD DECISION-MAKING (INTERIM)
F-CC-DM SD CRITICAL CHALLENGE / CONFLICT / CHANGE
PATTERN ANALYSIS
FRAMES-AR
VALUES-CL
FRAMES-CL-DM+CC
CASE RELATIONAL PATTERNS ANALYSIS
INITIAL VALUES: V-CL-DPr
LATER VALUES, CONTEXTUALLY ACTIVATED: V-CL-DMi, CC-DM
CL DECISIONS: F-CL-DM F-CL-CC F-CL-CC-DM
Inexperienced local institutional client
BACKGROUND: Document provided by OCRS3
V-F GOALS + CONTEXT:
V-F CL BACKGROUND:
RELATIONAL ANALYSIS
EARLY V-CLARITY: MED-HIGH; contextual IV
EARLY V-COMPATIBILITY: LOW; several
VH-CONSISTENCY: HIGH
VH-STABILITY: MED-HIGH
RECEPTIVITY to CONTEXTUAL VFR: MED-HIGH
RECEPTIVITY to CREATIVITY: HIGH
RECEPTIVITY to SD: HIGH
CL CONTEXT FAMILIARITY: Fairly low throughout; AR's F-AR-DMi and CC1
VFR+DM-OUTCOME CONSISTENCY: VERY LOW throughout; POS-DM at CC2 is because
Seemingly no VCL were elicited or shared during
AR11's CL3-Interactions; this may be due to his role
1) AR13-MD did not effectively transmit VCL Values-
2) AR11 was disengaged from Values-Based
3) AR11 and CL3 experienced V-INCOMPATIBILITY,
Intentional VFR, NEG-SD but POS-CL OUTCOME.
Potentially resulting from AR Values Structure &
Intentional VFR, NEG-SD but POS-CL OUTCOME.
Intentional VFR, NEG-SD but NEUT-CL OUTCOME.
Intentional VFR, NEG-SD and POS-SD but NEUT-CL OUTCOME.
Intentional VFR, POS-SD and NEG-CL OUTCOME.
Despite the Organisational or Strategic,
Possibly demonstrates the difficulty CL3 had in
AR11 also misses serial opportunities to VFR to
SD FACTORS TO CONSIDER:
SD ENERGY EFFICIENCY REGULATIONS:
SD MANAGEMENT APPROACH; HANDS-ON:
SD DM APPROACH:
STATUTORY SD REQUIREMENTS:
SD DM APPROACH:
SD APPR ADVISING AGAINST BREEAM [LOWER AGGRO]:
REAS MECH, BREEAM: LACK OF CLARITY, RELIABILITY:
PV STATUTORY JUSTIFICATION:
PLANNING RESTRICTION re. no Roof PVs:
OTHER COST-REDUCTION OPTIONS:
BOUNDARY VFR: PROJECT PROGRESS PRECLUDES LATE CHANGES:
REALITY BITES:
PATTERN ANALYSIS
V-CLUSTER1 VCL-Fulfilling Statutory Requirements and VCL-Trusting Our Advisors.
V-CLUSTER2 VCL-Clarity (Spiritual) + VCL-Knowledge, Education & Community (Spiritual) + VCL-True Spiritual Enlightenment and Freedom.
V-CL-CRITICAL/CORE of Clarity; Fulfilling Statutory Requirements. VCL-Providing Welcoming Estates was Reprioritised too late to become VCL-CORE.
#CHANGES also suggests that CL-VH and approach to SD was fairly well-established by CC, which seems to have served more to provide CL with additional CLARITY based on VC3
9 CHANGES: 7 up to CC, 2 in CC.
- CL3 goes through process of sense-making and learning about architecture and building design.
- CL-DM process comprised of serial clarification, boundary-seeking and recognition of requirements and responsibilities; and ultimately, capitulation.
- CL-DM Boundary-Seeking for lowest possible requirements, despite their espoused TV commitment to benevolence, care, community, learning and clarity.
6 CHANGES
9 CHANGES
1 CHANGE
1 CHANGE
(+) Both east-facing glass wall and PV panels installation on existing building retained.
Building completed.

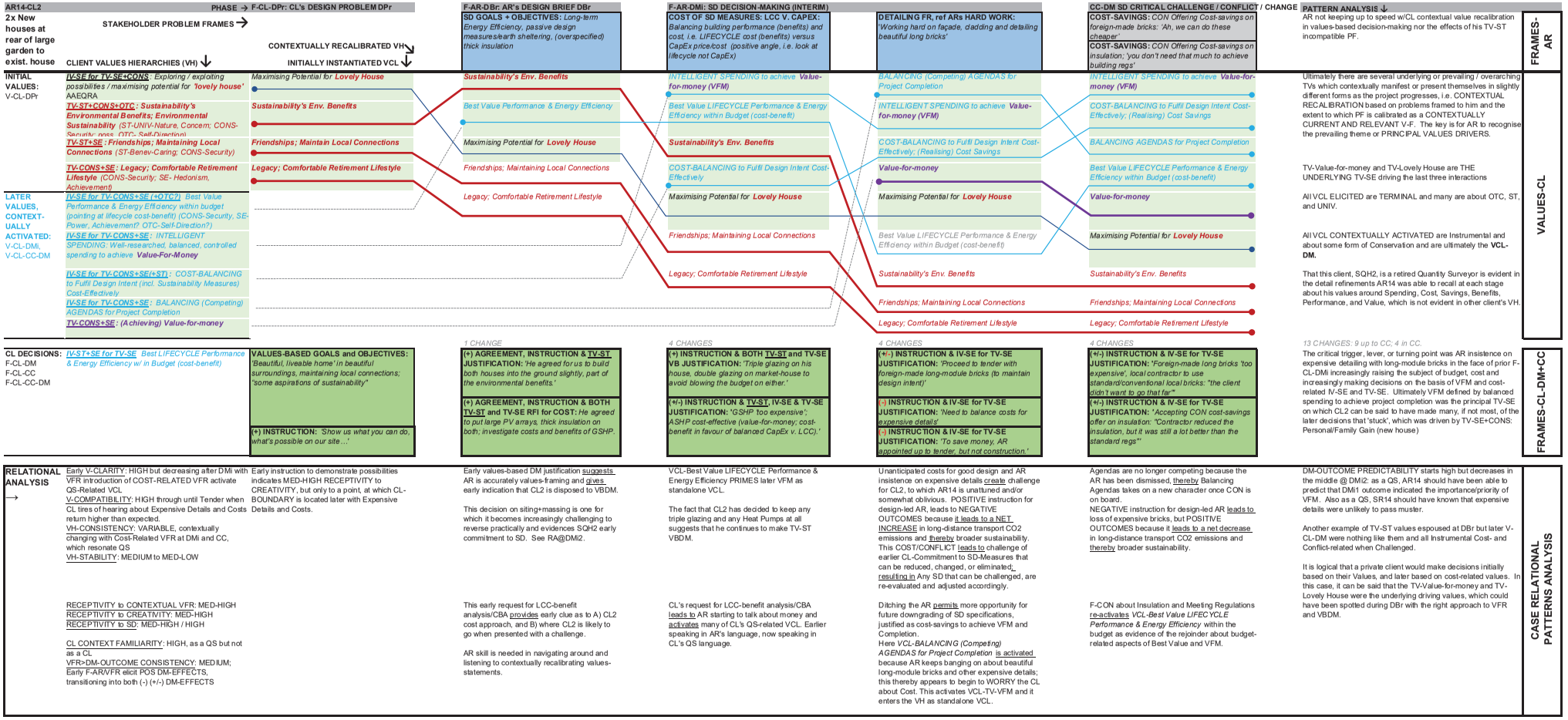

AR11-CL6
PHASE → F-CL-DPr: CL's DESIGN PROBLEM DPr
STAKEHOLDER PROBLEM FRAMES →
F-AR-DBr: AR's DESIGN BRIEF DBr
F-AR-DMi: SD DECISION-MAKING (INTERIM)
F-CC-DM SD CRITICAL CHALLENGE / CONFLICT / CHANGE
F-AR-DM
PATTERN ANALYSIS
CHALLENGE FR: DESIGN+SUSTAINABILITY APPROACH FOR COMPLIANCE: "we knew straight away it was going to be a nightmare... you can't just put a normal house there... you had to comply with PPS7 [Exemplary Design]. EcoHouse standards, superduper all singing, all dancing, all bells and whistles sustainable."
DESIGN CONCEPT (preconceptions) + JUSTIFICATION: MODERN STYLE FOR VIEWS AND LIGHT; "AR13 had some grand idea, looking down the hills, over a lake, beautiful, absolutely wonderful, prime view, good for light, massive vista windows, sliding doors…"
PLANNING STRATEGY VIA DESIGN + SD: "That was very early on. We'd seen it one way. Without putting pen to paper, our view was 'shit, it can only be this way to achieve planning [and satisfy PPS7 through exemplary design and high sustainability]."
AR11-EVAL; RECOGNITION OF DIFFERENCES: "Very old-school in their way of thinking [i.e. different from AR1 1/13]. We knew what we thought it should be, they had very clear ideas on what they thought they wanted, or what they did want; what they know they wanted
REFFRAMING SD CONTEXT: 'Sustainability was driven by the client; they had clear ideas straight away'
F-PCL: PLANNING OBJECTION TO MODERN APPEARANCE, UNCONTEXTUAL: Parish Council against dissimilar, modern architecture, contravening national policy PPS7: "the parish council were saying 'well, why would we go and put that there?' From their point of view it was like, 'where is the sense in that?'"
F-PCL: TRADITIONAL CONTEXT JUSTIFICATION: "It's right there [next to the village] even there's a chunk of houses right next-door which are traditional, there's a church with a spire, so it's [context is entirely] traditional."
F-AR-CC1: LOGIC-BASED AGREEMENT RE: LONGEVITY: "Which, you had to say 'well, you're quite right.' They are saying, we want to build something right next-door which is different than everything else that will be there for hundreds of years…!"
F-PC-CC2: MOVE BOUNDARY, EASIER RIDE IN PLANNING: "With planning [consultant] advice, the planning expert advice was, 'well, if you build on that site, you've got to do this [PPS7 exemplar design]. If you can make that boundary there, it's an easier ride.'"
F-AR-CC2: AGREEMENT + JUSTIFICATION RE: OBVIOUS PROXIMITY: [AR TO PCL] "The village boundary was in the wrong place, and it could extend to their bit of land. There's a red line and it's around town, there, just on the edge of it. It was obvious it should be within the village boundary."
REVISED BOUNDARY PERMITS PLANNING STRATEGY RECALIBRATION: "So, planning-wise it was an easier ride because it didn't need to be a highly sustainable, superduper, well insulated, one of these spectacular houses."
JUSTIFICATION FOR PLANNING STRATEGY RECALIBRATION: "Ironically, if they would've built to the national policy at the time [PPS7 Exemplary Design] it would've stuck out like a sore forking thumb!"
Early F-AR and VFR-Strategy Compliant Design Approach + Design Concept + Justifications seem to have shocked the client into revealing their actual VCL through F-CL-DBr; REFRAMED as FAR-Challenging Site and Statutory Compliance issue was initially successful.
Later CC from PCL of uncontextual Modern Appearance Validated VCL and scheme reverted back to VCL-Traditional Appearance; contravened PPS7, reducing opportunity for Exemplary Design and High Sustainability.
Follow-up FAR missed the opportunity to retain SD through REFRAMING, allowing FCL-SD to clarify/confirm interest in appearance not sustainability.
MISSED OPPORTUNITY to tap into VCL Conservation+SD.
FRAMES-AR
CLIENT VALUES HIERARCHIES (VH)
CONTEXTUALLY RECALIBRATED VH
INITIALLY INSTANTIATED VCL AT V-CL-DPr
INITIAL VALUES: V-CL-DPr
LATER VALUES, CONTEXTUALLY ACTIVATED: V-CL-DMi, V-CL-CC-DM
IV-SE + OTC-STIM: Lovely Family Home in the Country (AAEQRA)
IV-CONS-TRAD+CONFORM: Traditional Appearance
TV-CONS-TRAD+CONFORM: Traditional Country Lifestyle
TV-CONS-TRAD+CONFORM: Old-fashioned and Conservative
IV-ST-UNIV: Sustainability (Energy & Environment)
Lovely Family Home in the Country
Traditional Appearance
Traditional Country Lifestyle
Old-fashioned, Conservative
Sustainability (Energy & Environment)
Sustainability (Energy & Environment)
Traditional Appearance
Initial F-DPr were effectively devoid of VCL; Contextual FAR-DBr presented CC and activated all relevant VCL, which were considerably STABLE and CONSISTENT throughout, as suggested by AR11 at DMi [G3].
Obvious V-CLUSTERS VCL-Lovely Family Home in the Country; and Traditional Appearance; Traditional Country Lifestyle; and Old-fashioned, Conservative as VCL-DRIVER.
VALUES-CL
CL DECISIONS: F-CL-DM F-CL-CC F-CL-CC-DM
Inexperienced domestic client
V-B GOALS + CONTEXT: "New house on a lovely site, a beautiful site, on the edge of the town boundary; demo the old house, build a new one."
V-F GOALS + OBJECTIVES: "Very clear brief of what their requirements are, down to size of furniture…!"
4 CHANGES [NEG-CL, POS-SD]
I) CLARIFICATION OF TV-CONS-TRAD+CONFORM. GOALS + OBJECTIVES: "Oh, good grief, no, no, we're very very old-fashioned. We want small windows, we want it to look like a house, we don't want it to look like a school or an office. Pitched roofs, we like dormers, we like twiddly [decorative] bits.'… on the one hand they were very traditional…"
I) CLARIFICATION OF TV-CONS-TRAD+CONFORM. GOALS + OBJECTIVES: "Their view was, they were showing us pictures from Country Life magazine, and 'we like this chunky window surround…' It was like, wow okay, so we've got a bit of a challenge here."
(+) CLARIFICATION OF TV-CONS-TRAD+CONFORM. GOALS + OBJECTIVES: "So we want to use reclaimed bricks,' 'we're quite keen on a ground source heat pump', so they've done their own research."
2 CHANGES [NEG-CL, POS-SD]
(+) REITERATION OF TV-CONS-TRAD+CONFORM. GOALS; IV-SE + OTC-STIM CAPITULATION AGREEMENT + JUSTIFICATION: 'They wanted a traditional appearance; but we thought the modern approach would get planning, so we went ahead with that.'
2 CHANGES [POS-CL, NEG-SD]
(-) TV-CONS-TRAD+CONFORM REITERATION, INSTRUCTION: Reverted back to traditional appearance
2 CHANGES
(+) TV-CONS-TRAD+CONFORM INSTRUCTION: Proceeded with the request to Council to relocate boundary and develop CL's preferred traditional house in the meantime
(-) F-PC-CC2: BOUNDARY PERMISSION GRANTED: Village boundary was moved to include site within it, meaning the scheme only had to comply with lower standards of local planning law rather than higher standards of PPS7 for countryside sites.
0 CHANGES
(+/-) TV-CONS-TRAD+CONFORM INSTRUCTION + JUSTIFICATION: Traditional appearance trumped sustainability in materials choice: "…They were wanting to use reclaimed bricks, but because they look better, not from the sustainability perspective…"
AR11-EVAL: "It's been built now. And it's a traditional, lovely little house."
8 CHANGES: 6 up to CC; 2 in CC.
- Initial FCL-DPr of VERY CLEAR BRIEF seems to have either been devoid of VCLi or AR11 struggled to detect them. FCL-DM were all consistently and clearly expressing VCL & VH.
- It appears only by an VCL-Attuned PC that HKH6 was able to achieve the house they really wanted that was VCL-Compatible, rather than the house they were allowed.
- Early interactions up to DMi tried and initially succeeded in FAR making the case for PPS7-Design+SD with Appeals to implicit desire to gain planning consent, embedded in VCL-Lovely Family Home.
- Conditions conspired against and much of the initial SD-Potential was lost through planning.
- Failure to elicit more VCL and Frame to VCL present meant SD and Design had limited truck with HKH6.
FRAMES-CL-DM+CC
RELATIONAL ANALYSIS
EARLY V-CLARITY: LOW; increases to MED-HIGH after DBr
EARLY V-COMPATIBILITY: MED/LOW
VH-CONSISTENCY: HIGH after DBr
VH-STABILITY: HIGH
RECEPTIVITY to CONTEXTUAL VFR: MED initially to get planning, then LOW once PCL agreed with VCL-Traditional Appearance.
RECEPTIVITY to CREATIVITY: MED-LOW; initially accepting to get planning, as above
RECEPTIVITY to SD: LOW as above.
CL CONTEXT FAMILARITY: low throughout
VFR+DM-OUTCOME CONSISTENCY: Initially VERY LOW then after VH-CLARITY
Early presence of OTC, likely to be more towards SE and CONS, given the later VCL and outcomes.
Very few VCL identified at DPr; see PA-DM [o11].
Intentional VFR, intentional NEG-CL but POS-SD OUTCOME;
AR11&13 misreading the client/preconceptions;
AR-VFR-STRATEGY of Compliant Design Approach + Design Concept + Justifications seem to have shocked the client into revealing their actual VCL through F-CL-DBr; REFRAMED as FAR-Challenging Site and Statutory Compliance issue was initially successful.
AR-VFR of PPS7 + EcoHouse standards elicited positive response in terms of CL as SD-DRIVER re: reclaimed bricks and GSHP.
Intentional VFR, intentional POS-SD but NEG-CL OUTCOME.
AR pins Planning Strategy on PPS7 and its requirements, which instigates CL6 to reiterate their Values-based interests for the appearance and reluctantly accepts, demonstrating that VCL-Lovely Family Home was likely the lead, V-DRIVER.
AR Recognises that CL6 was strong-willed, evidencing foreknowledge of HIGH VH-CONSISTENT + VH-STABILE.
- Unintentional VFR (likely because PCL may not have known VCL), POS-CL NEG-SD.
- Modern design approach causes Parish Council (PCL) to object and insist on traditional appearance, much to CL6 appreciation, thereby VH-Recalibrating and Validating CL6 VCL+VH at DBr.
- Contextual appropriateness pointed toward traditional design as the most appropriate for the existing traditional context.
- PCL objection is likely contravening the applicability of PPS7 Exemplary Design and solely Modern. May subsequently provide Planning Consultant (PC) fuel to make Boundary Relocation argument.
Missed opportunity to VFR and tap into VCL Conservation+SD to keep and develop SD, rather than discovering that CL6 was more interested in appearance than SD; Unclear from AR11 if GSHP has been retained, but judging from publicly available photos, there are no PV panels so in order to meet Part L Building Regs the GSHP would likely have been retained.
Likely Intentional VFR (because PC seems to have picked up on VCL, or uses PCL argument as momentul, or is simply trying to be helpful) POS-CL NEG-SD.
VH-Stabilised likely due to lack of significant challenge from PC or AR. Continues to demonstrate VH-CONSISTENCY and VH-STABILITY.
Interaction as recounted is devoid of specific FR-SD; Losing PPS7 justification causes large reduction in NET-SD.
Intentional VFR, intentional POS-CL but inintentional NEG-SD OUTCOME;
With VH-STABILITY and prior VH-Validation, CL6 likely feels freer to claim real reasons for reclaimed bricks as appearance not SD.
The very nature of the project is to demolish an existing house and rebuild a new, more efficient, fit-for-purpose home. The sustainability of this is debatable and turns on the affordability of adapting and upgrading the existing house, which was not discussed in interview.
Early FAR/VFR-Strategy exposed planning CC and provided opportunity for VFR-PPS7 Exemplary Design and High-SE; Low initial V-CLARITY supplied little material on VCL which led to CL6 revealing their more complete VCL+VH which was demonstrated by their apparent reticence to accept modern design from PPS7 strategy. Later introduction of PCL and PC CC BOTH VALIDATED VCL+VH and provided opportunities lost for 'DEEP-VFR' to VCL-Conservation. This also contributed to [M15] VH-STABILITY which likely led CL6 to feel freer to claim real reasons for reclaimed bricks as appearance not SD.
CASE RELATIONAL PATTERNS ANALYSIS

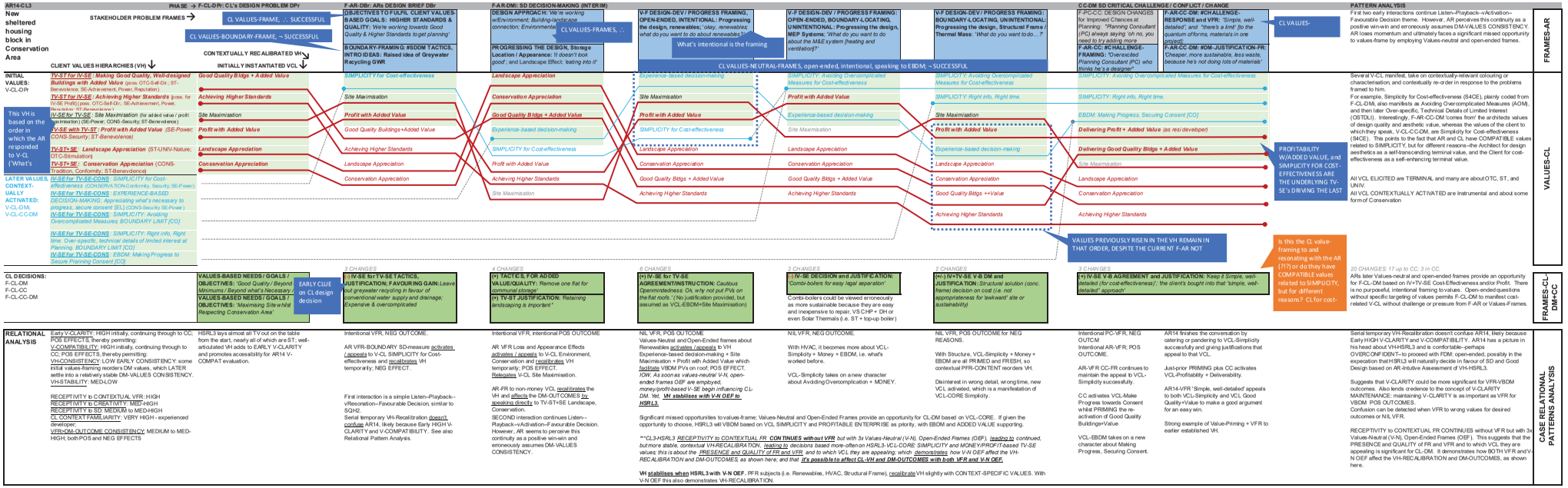

AR11-CL8
PHASE → F-CL-DPr: CL's DESIGN PROBLEM DPr
STAKEHOLDER PROBLEM FRAMES →
CLIENT VALUES HIERARCHIES (VH) ↓
CONTEXTUALLY RECALIBRATED VH ↘
INITIALLY INSTANTIATED VCL AT V-CL-DPr ↓
F-AR-DMi: SD DECISION-MAKING (INTERIM)
DD-MEASURES + JUSTIFICATIONS: 'We wanted to use Timber frame SIPS modular wall panel system; PFC: flexible applications and finishes, modular, panelised, quick erection…'
DD-PROCESS + PAST EXPERIENCE JUSTIFICATION: 'Positive past experience with SIPS material/method/system influenced our recommendations [system selection bias]'
CC-DM SD CRITICAL CHALLENGE / CONFLICT / CHANGE
SD-REDUCTION TACTICS + JUSTIFICATION: Information clarity and availability: 'Available information clarity on PassivHaus: understandability, information accessibility, well-researched and documented, Code 5 is unclear [i.e. on internet &
SD-REDUCTION JUSTIFICATION: PassivHaus Clarity on Delivery: clear rules re: window sizes, ventilation, etc.: "Something like passive house, the rules are the rules with that – it has to be this, it has to be this. Windows have to be a certain size, the ventilation has to be this…"
DM-JUSTIFICATIONS: PAYBACK AND MARKET DEBATE: "There was a bit of a debate about, 'well, where does it pay back?' And I suppose that depends on who you're selling to."
DM-JUSTIFICATIONS: MARKET-BASED FINANCIAL DRIVERS FOR BUYERS: 'Where/when sustainability pays back: market segment, what people want, willingness-to-pay'
PATTERN ANALYSIS
FRAMES-AR
AR-VFR Strategy: Pragmatic Sensemaking; Target + Objective Clarity + Deliverability. FAR continually seem to be Clarity-seeking and Justification-seeking for the CL requests.
AR does manage to VFR but seems to be more focused on satisficing (both satisfy and sacrifice) the client's demands to lower CFSH code and reduce risk.
INITIAL VALUES: V-CL-DPr
IV-ST-UNIV-CONCERN for IV-SE-POW: Marketing Value of SD for £ (SD as sales-tool)
TV-SE-POW: Profit (Power-Resources-Money)
LATER VALUES, CONTEXTUALLY ACTIVATED: V-CL-DMi, V-CL-CC-DM
TV-CONS-SEC: Avoiding or Mitigating RISK
IV-ST-UNIV-CONCERN for IV-SE-POW: Message Clarity for Desirability & Resales
TV-SE-POWER+CONS-SEC: Financial Viability, Soundness
Appreciating Marketing Value of Sustainability for £
Profit
Avoiding or Mitigating RISK
Profit
Appreciating Marketing Value of Sustainability for £
Message Clarity for Desirability & Resales
Message Clarity for Desirability & Resales
Appreciating Marketing Value of Sustainability for £
Avoiding or Mitigating RISK
Financial Viability, Soundness
Profit
Financial Viability, Soundness
Avoiding or Mitigating RISK
Profit
Appreciating Marketing Value of Sustainability for £
Message Clarity for Desirability & Resales
3 CHANGES [POS-CL, NEG-SD]
3 CHANGES [POS-CL, NEG-SD]
5 CHANGES [POS-CL, NEG-SD]
11 CHANGES: 3 up to CC; 8 in CC [POS-CL, NEG-SD]
VALUES-CL
- Likely V-CLUSTER1 VCL-Message Clarity for Desirability & Resales WITH VCL-Appreciating Marketing Value of Sustainability for £; poss. also with VCL-Profit.
- Likely V-CLUSTER2 VCL-Financial Viability, Soundness with VCL-Avoiding or Mitigating RISK WITH VCL-Profit as MAIN DRIVING VALUE.
- Possible that VCL could be interpreted by AR11 as Pragmatic, which resonates with AR's VFR approach; very little AR-EVAL to determine V-COMPAT.
- VH and recalibrations suggest an instrumental interest in SD only so far as it will deliver end sales and profit.
CL DECISIONS: F-CL-DM F-CL-CC F-CL-CC-DM
Semi-experienced local residential developer client.
Experienced delivery-side design-conscious, sustainability-neutral, pragmatic management-architect.
Dominance of SE and CONS throughout
V-F FACT-BASED GOALS + CONTEXT: 'Medium-sized town site, timber frame houses; picked up someone elses planning permission [to develop design into construction drawings]'
VB-GOALS + OBJECTIVES: 'CL appreciates marketing value of sustainability for improved sales [profit]'
(-) TV-CONS-SEC + TV+IV-SE-POW INSTRUCTION + CLARIFICATION: "That was all fine, then they wanted to see if we could appeal against Code 5 from planning consent, but still call it an eco-house…!"
(+/-) IV-SE-POW + IV-ST-UNIV DEBATE RE: CLARITY FOR RESALE VALUE OF ECO-HOUSES: "How well defined? What is it? Nobody knows what an eco-house is – with the view to selling on the houses, they were toying with the view, 'well what do we call it? Because we want to call it an eco-house, but now, what is an eco-house?'"
(-) IV-SE-POW + IV-ST-UNIV DEBATE OVER SD REDUCTION; JUSTIFICATION/REAS MECH: council acceptance and comprehension/understanding of a lower offer; "It triggered a debate, 'Will Brighton [Council] accept that [Level 4 justification]? Will Brighton understand that as an offer – we won't do code level 5, but we will do this…?'"
(-) TV-CONS-SEC + TV+IV-SE-POW RESALES, DESIRABILITY / CREDENTIALS: "And then there was also talk of 'well, do we just go for code level 4, and just appeal what's been granted, and say we're not going to achieve that, or we can't achieve that financially it doesn't make sense, it's uneconomical…' But with the overall view of 'well, we need to sell it on.'"
(-) TV-SE-POWER+CONS-SEC INSTRUCTION, JUSTIFICATION: 'Proceed to appeal for Code 4; JUSTIFICATION: not achievable practically and financially; it's just uneconomical.'
OUTCOME: Code 5 dispensation granted
FRAMES-CL-DM+CC
CL-DM seem to be following AR-VFR strategy of sensemaking; perhaps suggesting V-COMPAT.
CL appears to be continually pushing for AR to VALIDATE their concerns and de-risk through Code reduction. Appears to be a case of CL repeatedly trying to get AR on side for code reduction.
CL's DM consistently demonstrate their VCL and VH in context.
RELATIONAL ANALYSIS
EARLY V-CLARITY: MED-LOW
EARLY V-COMPATIBILITY: MED, somewhat unclear; Potentially leads to AR-VFR-Strategy: Sensemaking.
VH-CONSISTENCY: Increasingly HIGH after AR-VFR-DMi, but consistently NEG-EFFECTS.
VH-STABILITY: Very LOW;
RECEPTIVITY to CONTEXTUAL VFR: HIGH, as demonstrated LOW VH-STABILITY. POS-CL, NEG-SD-EFFECTS.
RECEPTIVITY to CREATIVITY: possibly MEDIUM when AR introduces PassivHaus with VFR-Clarity on Delivery; and REFRAMING FCL-Uneconomical [see last RA of last CC]. NIL-EFFECT.
RECEPTIVITY to SD: Med-LOW demonstrated by persistence to reduce SD-Code 5 to 4
CL CONTEXT FAMILIARITY: MED-HIGH demonstrated by Planning-Proceee knowledge and persistence to reduce SD-Code;
VFR>DM-OUTCOME CONSISTENCY: VERY HIGH throughout; starts NEG, continues NEG, ends NEG.
Med-Low initial V-Clarity immediately challenged by AR-VFR which activates remaining contextually-relevant values in this case.
Intentional VFR, POS-CL, NEG-SD OUTCOME.
VCL-Profit recalibrated downwards in VH by VFR which create V-B concern for VCL-Mitigating RISK and activate circumstantial VH-RECALIB.
Likely that VFR Complexity of technical detail activated TV-CONS-SEC: RISK; which then instigated excuse-finding with Message Clarity; nothing to mitigate except post-VFR fire-fighting.
1) FCL-Appeal Against Code 5 evidences or demonstrates VCL-Avoiding or Mitigating RISK;
2) FCL-Still Call it an Eco-house demonstrates VCL-Appreciating SD Marketing Value and VCL-Message Clarity for Desirability & Resales.
Intentional VFR, POS-CL, NEG-SD OUTCOME.
AR's unaddressed lack of clarity is clouding his judgement WRT cost and technical delivery challenges of PassivHaus vs Code 5/4
Again it seems VFR Complexity of technical detail was interpreted as 'Code 5 not well-understood, unclear' which continued activating TV-CONS-SEC: RISK and instigating excuse-finding with VCL-Message Clarity; also activated VCL-Financial Viability in FCL-Unenconomical.
Intentional VFR, POS-CL, NEG-SD OUTCOME.
AR-VFR intangible, placed focus back to the unknown wants of the buyer, which without knowing, could be manipulated through REFRAMING as an unknown unknown, therefore better to err on the side of pragmatism and lower SD to potentially be more attractive to more buyers (rather than an eco-niche).
AR's now-established VFR-Strategy of Satisficing appears to instigate VH-RECALIB by REFRAMING FCL-Uneconomical as a potential future BUYER question of PAYBACK, Market-Demand and Willingness-to-Pay
CASE RELATIONAL PATTERNS ANALYSIS
What's best for and satisfies the client is not always what's best for SD, which appears to be dependent on the VCL present/perceived, the VAR and AR-VFR contextually constructed.
- This case shows how strong-willed CL, HFTH8, will continue to press for their desired outcome. This case also demonstrates how VH does not always need to be VH-STABLE but the outcomes are related to VCL and VH-CONSIST as well as the VAR and their VFR skill.
- It would appear that AR11 attempted drive PassivHaus into the frame, which is SD-higher than Code 5 and 4, but got nowhere.
- Perhaps unsurprising that a residential developer has dominant SE+CON values around TV-SE-POWER-DOM-PROFIT + TV-CONS-SEC.
- It is also possible that VAR + VCL led AR11 to later VFR-Strategy of SATISFICING.

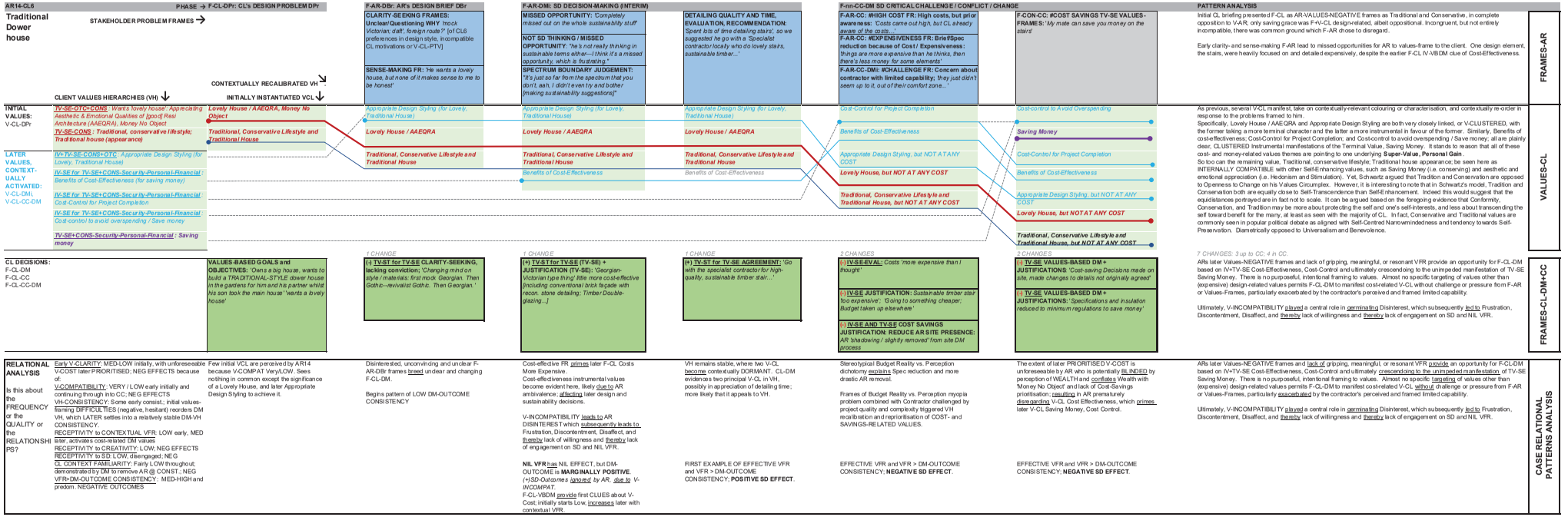

AR13-CL1
PHASE → F-CL-DPr: CL's DESIGN PROBLEM DPr
New house in grounds of listed building on footprint of disused paddock in an AONB
STAKEHOLDER PROBLEM FRAMES →
F-AR-DBr: AR's DESIGN BRIEF DBr
F-AR-DM: SD DECISION-MAKING (INTERIM)
F-AR-CC-DM SD CRITICAL CHALLENGE / CONFLICT / CHANGE
PATTERN ANALYSIS
FRAMES-AR
CHALLENGES, CONSTRAINTS+ IMPLICATIONS; RECOMMEND APPROACH: Difficult planning: 'Recommend you consider PassivHaus, can't build in AONB; Will need to be Para 55 Exceptional Architecture'
SD APPROACH: PASSIVHAUS 'We support appropriate, location-based applications of PassivHaus principles'
SD APPROACH: INNOVATION 'Para55 house type requires innovation; "pushing the boundaries" so trust and respect is key'
SD CONCEPT: 'Provide an 'innovative response' under NPPF Para55 special circumstances: Year-round courtyard design'
SD CONCEPT/PRINCIPLES ELABORATION: 'Low-/ying & highly sustainable, get M&E right at design stage'
SD CONCEPT APPROACH & IMPLICATIONS: "I spent a lot of time explaining about how PassivHaus works, and what the implications were"
SD MEASURES RECOMMENDATIONS + EXPLANATIONS: 'Natural Ventilation + Air Tightness for Controlled Ventilation'
SD MEASURES RECOMMENDATIONS: 'I recommended they go Off-Grid: Could easily have a large area of solar PVs, approx 140 sqm'
SD MEASURES: 'We sent the scheme for performance modelling'
SD DETAIL MEASURES: Boiler type and use patterns: 'M&E system also depends on what sort of boiler you'd have and how much you'd want to use it'
CC1: SD COORD., COURTYARD SOLAR DESIGN: 'Solar Design, asked recommendations from ME-CONS' "M&E Consultants 'can't react without a design', can't have a debate"
SD DESIGN DEVELOPMENT: 'I asked the ME-CONS: 'Solar shading the Courtyard, do we need to provide a canopy or not?'
M&E CONSULTANTS LIMITATIONS: "We've reached M&E designers' limitations; Except for *******, they're all reactive systems designers rather than concept designers"
SD SOLUTIONS: "Even with a model they couldn't tell me exactly;" "Alternative approach: retractable pergola, large eaves overhangs and deep window reveals'
CC2: TECHNICAL DELIVERY CHALLENGE, GSHP & O/A ENERGY PERFORMANCE GOALS: 'So I explained to them about GSHP, it depends on the right soil conditions…'
RENEWABLES Evaluation, justification, possible alternatives: 'GSHP is mechanical with questionable efficiency ratios of 1:4-1:2 and running/maintaining pumps in relation to cost.' "Does that actually make sense? Would it not be better just to have some more PVs, or in a windy area you put a wind turbine up?"
RENEWABLES GOALS: 'We are trying to achieve FABRIC ENERGY PERFORMANCE' whereas the M&E-CONS is trying to achieve OVERALL ENERGY PERFORMANCE'
CC3: TECHNICAL DELIVERY CHALLENGE, AIR-TIGHTNESS: 'Meeting PassivHaus air-tightness criteria with a courtyard house that's not a sealed box'
ENERGY PERFORMANCE CONSTRAINTS AND MEASURES: "you get the right insulation, the right u-value, etc, and change the facing [orientation], but then there was a planning context to the facing, so you know, your room for manoeuvre is quite small.'"
PROVING ENERGY PERFORMANCE: "I went to prove—to prove for the Para55—that we can meet the PassivHaus standards achieve OVERALL ENERGY PERFORMANCE… but by [those] other ways'
FAR strong evidence of a lay-it-all-out, knowledge-building and relationship-building approach CL-Engagement. FAR/VFR approach of explaining and justifying moves seems to resonate well with BPFF1 and engenders SERIAL-POSITIVE results.
CLIENT VALUES HIERARCHIES (VH) ↓
CONTEXTUALLY RECALIBRATED VH ↘
INITIALLY INSTANTIATED VCL ↓
VALUES-CL
CLIENT'S INITIAL VALUES: V-CL-DPr
TV-ST-BENEV: Family Values, Togetherness (Poss Pers.Security)
TV-ST-BENEV+SEC: Mobility and Responsiveness to Disability
TV-ST+SE-UNIV+SEC: Connection and Access to Nature
TV-ST-UNIV+SEC: Sustainability and well-being
Family Values, Togetherness
Mobility
Connection and Access to Nature
Sustainability and well-being
Mobility (via courtyard living)
Family Values, Togetherness
Connection and Access to Nature
Sustainability and well-being
Sustainability and well-being
Connection and Access to Nature
Technical Performance for Quality of Life
Mobility (via courtyard living)
Family Values, Togetherness
Connection and Access to Nature
Sustainability and well-being
Mobility (via courtyard living)
Technical Performance for Quality of Life
Family Values, Togetherness
Sustainability and well-being
Connection and Access to Nature
Mobility (via courtyard living)
Technical Performance for Quality of Life
Reasonable Running Costs
Family Values, Togetherness
Sustainability and well-being
Connection and Access to Nature
Mobility (via courtyard living)
Technical Performance for Quality of Life
Reasonable Running Costs
Family Values, Togetherness
Relative VH-Stability and VH-Consistency likely to continute to AR-VFR SUCCESS.
VCL Robustly Pro-SD
Three V-CLUSTERS of Nature-Sustainability, Quality of Life and Family might be considered VCL-Principal Driving Values.
It could be possible that some of these VCL are associated with Family and the Disability one is managing:
CL appears to have very high SD-Boundaries, Lower Boundary at 'Sealed Box'
10 CHANGES: 6 Changes to CC; 4 After CC.
LATER VALUES, CONTEXTUALLY ACTIVATED: V-CL-DMr, V-CL-CC-DM
IV-SE-SEC for TV-SE+CONS-SEC: Technical Performance for Good Quality of Life (Wellbeing)
IV-SE-CONS-SEC: Reasonable Running Costs
FRAMES-CL-DM+CC
CLIENT'S DECISIONS F-CL-DMr / DM / CC
Inexperienced private residential client
Dominance of TV-ST
V-F BASIC, FACT-BASED NEEDS/GOALS AND CONTEXT FR: 'CL approached us for a new house in grounds of listed building on footprint of disused paddock in an AONB'
TV-ST-BENEV VALUES-BASED IDEALS, GOALS AND OBJECTIVES: 'Retirement home bringing together family with mobility issues'
TV-ST-UNIV VALUES-BASED IDEALS, GOALS: 'Wants to maintain the connection with nature provided with the site and interested in sustainability…'
1 CHANGE
(+) TV-ST-ALL AGREEMENT, INSTRUCTION+ CAVEAT: 'They agreed, but "they don't want to be in a sealed box; they want to live in a courtyard"'
4 CHANGES
(+) TV-ST+SE-UNIV+SEC AGREEMENT, RFI / SD SUGGESTION/REQUEST: 'They were OK with passive house principles; What about using GSHP?'
1 CHANGE
(+) TV-ST+SE-UNIV+SEC AGREEMENT, INSTRUCTION: 'They went for off-grid / PVs, and controlled NAT.vent, openable windows…'
(/) V-F RESPONSE w/RESERVATIONS: 'unsure about boiler; it's used mornings, evenings, and throughout day mainly for washing up and teas; sometimes baths.'
2 CHANGES
(+) TV-ST+SE-ALL AGREEMENT, INSTRUCTION: "They agreed to proceed with the alternative, and wanted to retain the intimate courtyard garden as open-air.'
2 CHANGES
(+) TV-ST+SE-ALL AGREEMENT, INSTRUCTION + JUSTIFICATION: 'They went for the GSHP with underfloor heating and the PV; appreciate the efforts on performance, helps keep down running costs'
0 CHANGE
(+) TV-ST+SE-ALL AGREEMENT, INSTRUCTION: They agreed and we took that scheme to planning'
RESULT: PLANNING GRANTED
Dominance of TV-ST plus presence of VCL-OTC and Context-VFR RECEP likely contributes robustly to VERY HIGH VFR=DM-OUTCOME CONSISTENCY throughout and overwhelmingly POS RESULTS.
CASE RELATIONAL PATTERNS ANALYSIS
RELATIONAL ANALYSIS
EARLY V-CLARITY: HIGH
EARLY V-COMPATIBILITY: MED-HIGH
VH-CONSISTENCY: HIGH
VH-STABILITY: MEDIUM
RECEPTIVITY to CONTEXTUAL VFR: HIGH
RECEPTIVITY to CREATIVITY: HIGH
RECEPTIVITY to SD: HIGH
CL CONTEXT FAMILIARITY: Fairly low throughout; AR's CCs demonstrates CL unfamiliarity and introduces new issues with challenges AND solutions;
VFR>DM-OUTCOME CONSISTENCY: VERY HIGH throughout; POS RESULTS
Early VCL-CLARITY helps establish V-COMPAT; VH-CONSISTENCY helps AR to VFR, and when combined with VH-STABILITY contributes to HIGH DM-OUTCOME CONSISTENCY
No initial clues on CL Approach to COSTS
High potential for VFR.
Surprising that Trust and Respect are not Contextually Activated, suggesting that either they're implicit and implied in CL-Agreement, or they remain in the CL-VH but are not surface-level priority in this interaction.
AR-VFR Structuring: Challenges - Constraints - Implications - Recommended Approach - Concept: SUCCESSFUL in eliciting POS-SD-DM
SD-Approach VH-RECALIBRATES with VCL-Mobility as the Priority.
Unclear whether "Trust and Respect" was said to CL or AR just recounting principles of the situation to me. That Trust and Respect don't appear as VCL suggests as much.
AR-VFR Follows-up with SD CONCEPT / PRINCIPLES ELABORATION - SD CONCEPT APPROACH & IMPLICATIONS
Is this narrow-mindedness or commitment? Demonstrates commitment to the Right Solution for the Right Reasons.
VH Recalibration when AR-VFR SD Approach appeals to both VCL-Sust + VCL-Nature Connection, DEACTIVATES VCL-Family, poss only because the FAR-Focused on PassivHaus approach and implications.
VH Recalibration when AR-VFR-SD APPROACH DETAILS appeals to both VCL-Sust + VCL-Nature Connection, ACTIVATES VCL-Technical Performance for Quality of Life DEACTIVATES VCL-Mobility
Continued VFR>DM-OUTCOME CONSISTENCY
Contextual VH Recalibration when AR-VFR Approach/Structuring appeals to both VCL-Courtyard-related, reactivating VCL-Family.
AR-VFR introduces FCC in terms of INTANGIBLES and then REFRAMES into TANGIBLES with evaluation, tangible ALTERNATIVES and JUSTIFICATIONS; also results in Contextual VH Recalibration, see below.
VAR-Energy Performance continues to activate VCL-Performance for QOL.
VCL-Family Values are contextually-deactivated owing to the focus and content of F-AR on details of CC with choices of SD Measures.
FAR intro of running and maintenance activates VCL-Reasonable Running Costs
VFR-INTENTIONAL links VCL-Mobility with VCL-Nature and VCL-Sustainability with specific tangibles and JUSTIFICATIONS to generate/facilitate CL-Agreement
AR13 robust commitment to SD-Passive Design evidenced by serial suggestions of SD-Options / Alternatives and Justifications continues to reap POS EFFECTS.
Generally an exemplar project and client evidencing OTC and TV-ST values contributing to VERY HIGH SD-OUTCOMES.
Also exemplar of 'pushing-on-an-open-door'.
10 VH-Changes but MED-HIGH VH-STABILITY, HIGH V-CONSIST and HIGH-SD Outcomes suggests HIGH RECEP-CONTEXT-VFR + SD-related VCL + VFR-SUCCESSFUL = HIGH SD-Outcomes
Rating HIGH on all RA-BaselineCategories combined with AR13 VFR-Skill seems to have overcome Low CL CONTEXT FAMILARITY for generally Outstanding results.

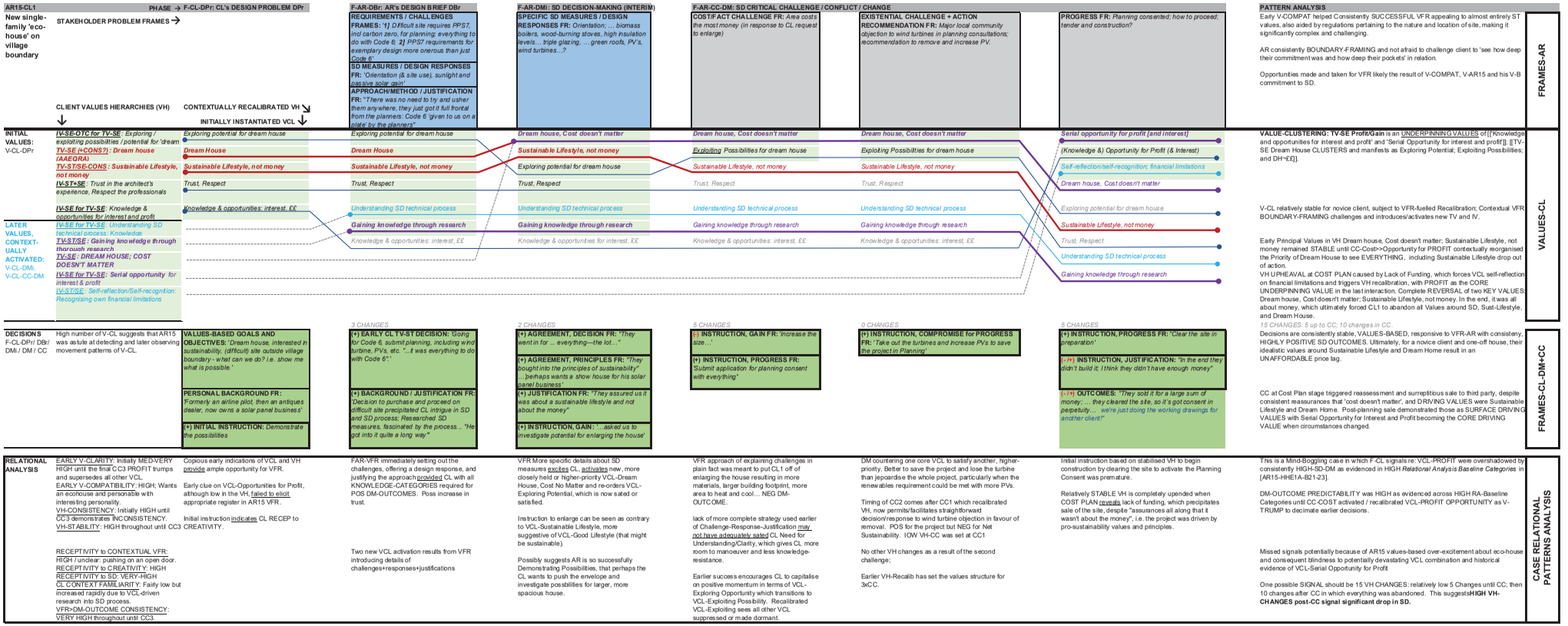

AR13-CL4
New single-family 'eco-house' on village boundary
PHASE → F-CL-DPr: CL's DESIGN PROBLEM DPr
STAKEHOLDER PROBLEM FRAMES →
F-AR-DBr: AR's DESIGN BRIEF DBr
F-AR-CC-DM: SD CRITICAL CHALLENGE / CONFLICT / CHANGE
PATTERN ANALYSIS
PLANNING CONTEXT RE: SENSITIVE SITE: "There was a planning issue… [the site was considered to be a Greenfield and not within a developable area]"…
PLANNING CONTEXT IMPLICATIONS: "[The planning application therefore had to be made under the very onerous PPS7 rural exception policy]"… and there are "[demands imposed by the principles of zero carbon emissions]"
DGN+SD APPROACH, RECOMMENDATIONS: "This means creating "[an exemplary and outstanding piece of design] … to [create a sequence of organic spaces and forms brought together by a unifying curved wall]" … With a flat, green roof, PV cells, and wind turbine.'
SD MEASURES IMPLICATIONS: PV HEIGHT ISSUE: "[but] when you've got both [PVs and Green Roof], you need to have air and space between them…"
CC1: COMMUNITY'S TURBINE OBJECTIONS + IMPLICATIONS re: visibility & noise on sensitive site; "You see, we're not the only parties in this. You put a turbine on almost any site and there's uproar… this was a sensitive site"
CC2: COMMUNITY'S FLAT ROOF OBJECTIONS re: traditional pitched tile-hung roofs, no visible PVs: "we wanted a flat roof, whereas the community wanted pitched roofs, but pitched roofs make it much higher, etc., and if we had gone for pitched roofs, they wanted to see traditional tile hung and they certainly didn't want to see PVs"
SD MEASURES IMPLICATIONS: "[but] there was a planning [visibility] issue with the height of the roof and PV's, so in the end you probably could have one or the other."
SD MEASURES RECOMMENDATIONS + IMPLICATIONS: "The way to get PVs was actually to hide them: they're not quite as efficient flat, …its not as much as you'd think but, as you probably know, you lose about 7%."
CC3: AR LATER CHALLENGE TO CL DM "What about if we put a green roof on the garage because there was no PV there?"
Consistent 'Hard Fact'-based VFR and AR-FR-Strategy of SD-APPROACH - RECOMMENDATIONS - IMPLICATIONS is serially successful, until CC3. F-AR-CC3 SD-Recommendation + Justification is only TEMPORARILY-SUCCESSFUL when F-CL-TRUMP COST.
HIGH VH-CLARITY, CONSISTENCY, STABILITY provides AR13 with ample material to VFR, which he does successfully and consistently. VH-STABILITY provides AR16 with confidence to Challenge CL4 with 'Hard Fact'-based VFR and reinforce FR high-boundary Statutory Requirements.
FRAMES-AR
CLIENT VALUES HIERARCHIES (VH)
CONTEXTUALLY RECALIBRATED VH
INITIALLY INSTANTIATED VCL
CLIENT'S INITIAL VALUES: V-CL-DPr
[CO]
TV-ST-UNIV-NATURE : Naturalistic Experience, Connection to Nature
TV/IV-SE-OTC+CONS : Creating a Dream Family House
TV-ST-OTC/CONS : Sustainable Lifestyle
TV-ST-OTC/CONS : Sustainability & Sustainable Energy
LATER VALUES CONTEXTUALLY ACTIVATED V-CA: V-CL-DMi, CC-DM
IV-SE/CONS-ACHIEVE/POW/SEC : Securing Planning Consent
IV/TV-ST-UNIV/BENEV/CONFORM : Avoiding Community Discord
TV-SE-CONS : Cost Savings / Saving Money
Naturalistic Experience, Nature Connection
Creating a Dream Family Home
Sustainable Lifestyle
Sustainability & Sustainable Energy
Securing Planning Consent
Creating a Dream Family Home
Naturalistic Experience, Nature Connection
Sustainability & Sustainable Energy
Sustainable Lifestyle
Securing Planning Consent
Creating a Dream Family Home
Naturalistic Experience, Nature Connection
Sustainability & Sustainable Energy
Sustainable Lifestyle
Avoiding Community Discord
Securing Planning Consent
Creating a Dream Family Home
Naturalistic Experience, Nature Connection
Sustainability & Sustainable Energy
Sustainable Lifestyle
Cost Savings / Saving Money
Creating a Dream Family Home
Naturalistic Experience, Nature Connection
Sustainability & Sustainable Energy
Sustainable Lifestyle
Avoiding Community Discord
Securing Planning Consent
V-CLUSTERS of Nature, Sustainability, Sustainable Energy and Sustainable Lifestyle.
However, AR15-DM-VF-MAP shows that VCL-Sustainability & Sustainable Energy are LINKED/CLUSTERED with VCL-Serial opportunity for profit [and interest], and is likely to be linked to VCL-Cost Savings/Money.
IV-SE/ST emerge as top priority in CC. HIGH TV are later TRUMPED by contextual IV.
Later V-CA are demonstrated by their prevalence in VH priority.
OTC demonstrated by HIGH SD-RECEPTIVITY and later CC1+2 adjustments to renewables.
IV Planning-related are de-activated once Planning Consent is granted.
7 CHANGES: 3 up to CC, 4 in CC.
Consistently positive SD-DM outcomes can be tied to VCL-Nature/Sustainability, V-COMPAT > AR-VFR combined with V-CL-ST+OTC and associated RECEPTIVITY.
Initially consistently positive decisions later OVERTURNED by V-TRUMP Cost Savings / Saving Money.
#AR EVAL: 'It's the same principle, [[frequently]] you find you've won a victory here, but you lose it later on."
VALUES-CL
DECISIONS
F-CL-DMi / DM / CC
Inexperienced private residential client
Dominance of TV-ST/SE Sustainability-related VCL until Contextual IV trump and
VF BASIC, FACT-BASED NEEDS/GOALS AND CONTEXT FR: We did a house [an EcoHouse], it was on a difficult site on the village boundary'… "[on a site that was formerly a water pumping station]"
VALUES-BASED GOALS AND OBJECTIVES: "[the client's desires [were] for a naturalistic experience]"; 'a dream house' for their family
VALUES-BASED GOALS AND OBJECTIVES: 'they were interested in sustainability from the outset… living a 'sustainable lifestyle'
3 CHANGES
(+) CLARIFICATION PROJECT FEASIBILITY / VIABILITY: 'OK, is it possible to get a planning consent'?
0 CHANGES
(+) MUTUAL AGREEMENT, DECISION FR: NEED TO GET PLANNING: "We came to a joint decision—to get planning, one or other would have to go … it was entirely to do with securing a planning consent"
1 CHANGES
(+) MUTUAL AGREEMENT, DECISION FR: NEED TO GET PLANNING: 'Take the turbines off, put more PVs'
0 CHANGES
(+/-) AGREEMENT, DECISION FR: 'proceed with PVs at a low-angle on the flat roof; accept the efficiency loss'
'PLANNING CONSENT GRANTED
3 CHANGES
(+) AGREEMENT, DECISION FR: "The client promised me that he would put a green roof on the garage because there was no PV there."
(-) DISAGREEMENT, DECISION FR: GREEN ROOF TOO COSTLY "But when it came to it, he didn't put them on, and I said 'what about that' and … he grumbled 'ah, well, its costly and… So at that stage, the cost has come in more' "
FRAMES- CL-DMi+CC
RELATIONAL ANALYSIS
EARLY V-CLARITY: HIGH
EARLY V-COMPATIBILITY: HIGH
VH-CONSISTENCY: HIGH
VH-STABILITY: Relatively HIGH throughout, until later CC-Cost precip. VH-INSTABILITY
RECEPTIVITY to CONTEXTUAL VFR: MEDIUM-HIGH;
RECEPTIVITY to CREATIVITY: HIGH
RECEPTIVITY to SD: HIGH
CL CONTEXT FAMILIARITY: LOW throughout; AR's CCs demonstrate CL unfamiliarity with new issues;
VFR>DM-OUTCOME CONSISTENCY: Relatively HIGH throughout until later CC
CL4 lays almost everything out on the table from the start; well-articulated VH provides EARLY V-CLARITY and promotes accessibility for AR13 V-COMPAT evaluation.
NO INITIAL CLUES ON VCL-COST or approach to cost.
Early CLARITY and COMPATIBILITY engender High potential for VFR.
AR lays out and clarifies all the issues from the start, highly challenging site with significant demands for high sustainability and exemplary design, but creates VH-Recalibration with concern about viability of the project based on FAR 'Planning Issue'
VH-Recalibration at design brief resulting from VFR-Planning Issue activates VCL-Securing Planning Consent / Contextual Values Activation.
VH-Recalibration at design brief resulting from VFR-Planning Issue activates VCL-Securing Planning Consent.
FAR/FCL "Coming to a joint decision" suggests VCL-Trust, but not evidenced in the interview.
VH-Recalibration at CC1 resulting from VFR-We're not the only parties; Turbine Uproar; Sensitive Site activates VCL-Avoiding Community Discord / Contextual Values Activation. Also evidencing Self-transcending value; unclear if Instrumental or Terminal.
This VFR-VBDM demonstrates how CL can be seen to make DM against their values professed earlier as priority, when new VFRs are actually activating CONTEXTUALLY HIGHER PRIORITY VCLs (not stronger-held) and recalibrating their VH where less CONTEXTUALLY HIGHER PRIORITY VCLs are relegated or suppressed.
VH-Stability at CC2 after VH established at CC1. Ability of HHE4 to consume, process, and digest copious technical process/procedural detail seems to evidence AR15 estimate of VCL-Knowledge & opportunities for interest and profit, which is not evident here.
This strategic VCL-Avoiding Community Discord was detected with AR13 but not AR15 who was the project architect. One possible explanation is that the conversation was had by AR13 and not AR15. Another explanation could be that AR13 is the MD and more attuned to strategic manoeuvres, whereas AR15 could be more sensitive to project-specifics. The other is that AR13 was calibrating his interview responses in terms or principles and strategies, whereas AR15 was transfixed on specifically responding to the interview questions.
Contextual Values Deactivation due to Project Phase Change from Planning to Detail Design / Tender.
Tender Prices come in higher than expected, effecting VH-Recalibration at CC3 with Contextual Values Activation VCL-Cost Savings…
No evidence of ultimate outcome of HHE4 selling to new client and AR's developing design with Code 4 reduction.
Initial Sustainability-related Terminal-VCL continually crowded out by situationally-activated Instrumental Values which may or may not be effective in securing the goals embodied in the Terminal Values espoused earlier.
Like AR16-HSB2, VH-STABILITY and VH-CONSISTENCY provide CLARITY and facilitate rapid, early V-COMPATIBILITY to provide AR13 with fertile ground to consistently HIGH-VFR. AR13 gets an early feeling for CL4-DM at DBr based on strong values TV-Sustainability.
Consistent, relatively POSITIVE outcomes and consistent VFR > V-ACTIV > (+)VB-DM patterns demonstrate HIGH VFR>DM-OUTCOME CONSISTENCY. AR challenges to VH-CL further support this view, until CC3 V-TRUMP Cost.
This case demonstrates that CONTEXT FAMILARITY is not linked or correlated with HIGH VFR>DM-OUTCOME CONSISTENCY.
Also demonstrates that HIGHER POST-CC VH-Changes = LOWER SD
CASE RELATIONAL PATTERNS ANALYSIS

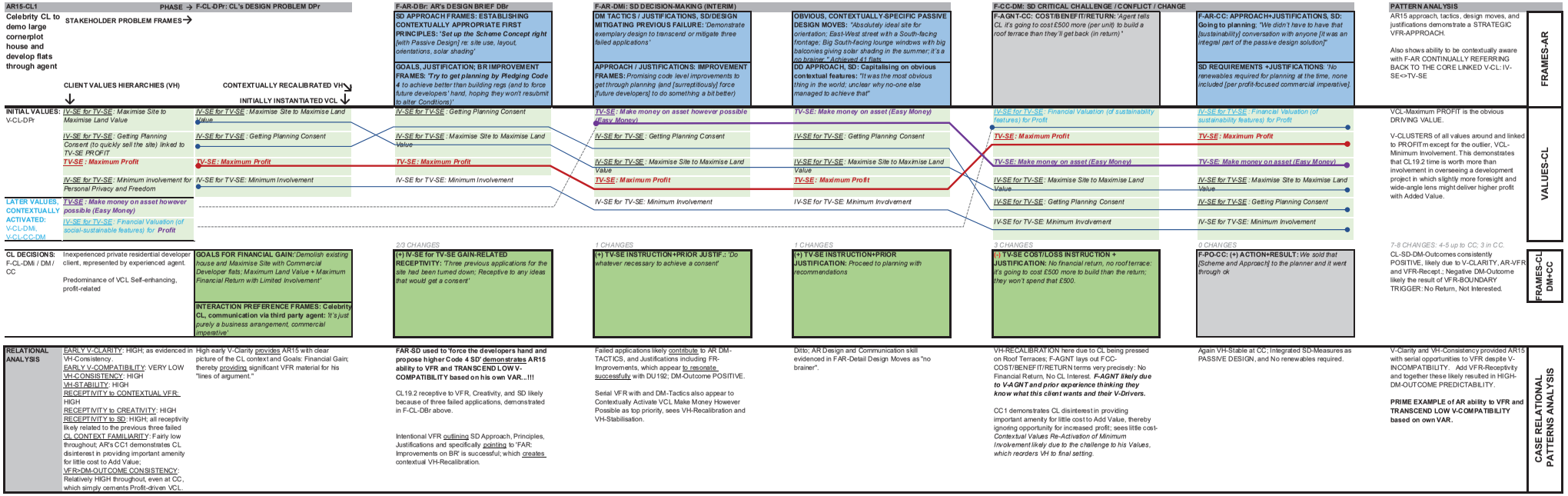
AR13-CL5	PHASE →	F-CL-DPr: CL's DESIGN PROBLEM DPr	F-AR-DBr: AR's DESIGN BRIEF DBr	F-AR-DMi: SD DECISION-MAKING (INTERIM)	F-AR-CC-DM SD CRITICAL CHALLENGE / CONFLICT / CHANGE		PATTERN ANALYSIS	
2x New houses at rear of large garden to existing house	**STAKEHOLDER PROBLEM FRAMES →** **CLIENT VALUES HIERARCHIES (VH) ↓**	**CONTEXTUALLY RECALIBRATED VH ↘** **INITIALLY INSTANTIATED VCL ↓**	**BOUNDARY-SETTING: REGULATORY LIMTATIONS PF**: *"...of course you want to get as green as possible, but within the parameters of what the state—the STATE—will allow you… which is fairly limited."*	**SD JUSTIFICATION: ALWAYS BAD STORIES:** *"You'll always hear bad stories"; 'Disagree: GSHP better, but not done cheaply; right conditions and right installer'* **PVs JUSTIFICATION, PERFORMANCE v DETERIORATION:** *"if you don't clean them, the performance will go down dramatically." '25% deterioration over 25 years, already built into the calculations.'* **NAT. GOVT. UNSUPPORTIVE:** *'Government loss of credibility unhelpful in contributing to climate of disinterest, distrust [in renewables].'*	**CL COST CHALLENGE:** *'£1m budget, £1.3 tender'* **SD APPROACH-RECALIBRATION: 'FABRIC FIRST APPROACH** *permits later addition of "true renewables"; Facilitated by continuing technology price reductions'* **SD DM TACTICS, DELAY DECISION:** *"You try and keep the client on board as long as possible… if you're losing it at the tender stage, there is no time left to manoeuvre."*	**PLANNING+FINANCIAL CC-VFR; JUSTIFICATIONS TO RETAIN:** *'Changing a planning condition costs more, 5-year PV payback, "better to just get on with it", make fabric efficient, decide on renewables latest possible* **SD APPROACH-APPLICATION: FABRIC+ENERGY:** *highly efficient fabric reduces energy reliance and means less renewables* **SD DM JUSTIFICATION:** ***Speed of technological change*** *favours decision delay re: efficiencies+ alternatives/ new future technologies; opportunities for more persuasion* **OFFSETTING PV LOSS ELSEWHERE?** *"the problem with that is that if you're concentrating on the fabric, where are those savings? […] the most expensive thing is area. If you bring the area down, you save money."*	Early V-CLARITY AND V-COMPAT help establish AR13 VFR-Approach of Honesty, Truthfulness, Fact embedded in VFR-JUSTIFICATIONS including Detail at appropriate times is serially successful in VH-Recalibration in favour of SD and later retaining a large proportion when tender costs are high. AR13's later VFR SD APPROACH-RECALIBRATION to **include *both* immediate and broader-context justifications is particularly skilful.** Includes incorporation of performance deterioration in calcs; Speed of technological change/efficiencies; FR of True Renewables; payback times. VFR-Gov't Climate of Distrust is not particularly helpful, but it remains unclear if this was said to SQH5 CL.	**FRAMES-AR**
CLIENT'S INITIAL VALUES: V-CL-DPr	***IV-SE-Achievemt**: Investigating Possibilities, Potential (for family benefit)* ***TV-ST-CONS/SEC+BENEV/Caring: Maintaining Local Connections** (Friendships)* ***TV-ST/SE-UNIV/NAT+CONS/SEC: Sustainability** / Pragmatic Sustainability* ***TV-ST/SE-CONS/SEC: Future-proofed; Long lifespan of building and FFE***	*Investigating Possibilities, Potential (benefit)* ***Local Connections*** ***Sustainability*** ***Future-Proofed; Long Lifespan***	*Investigating Possibilities, Potential (benefit)* ***Pragmatic Sustainability*** ***Cost-effectiveness*** ***Future-Proofed; Lifespan*** *Local Connections*	***Trust*** ***Cost-effectiveness*** ***Future-Proofed; Lifespan*** ***Pragmatic Sustainability*** *Investigating Possibilities, Potential (benefit)* *Local Connections*	*Balancing Budget for Completion (RISK-AVOIDANCE)* ***Cost-effectiveness; Saving Money*** *Investigating Possibilities, Potential (benefit)* ***Trust*** ***Future-Proofed; Lifespan*** ***Pragmatic Sustainability*** *Local Connections*	*Balancing the Budget for Completion (RISK-AVOIDANCE)* ***Cost-effectiveness; Saving Money*** *Investigating Possibilities, Potential (benefit)* ***Trust*** ***Future-Proofed; Lifespan*** ***Pragmatic Sustainability*** *Local Connections*	Initial VCL-Sustainability was contextually recalibrated as VCL Pragmatic Sustainability, suggesting that pragmatism + sustainability played an important PREVAILING or UNDERPINNING role in CL-DM as DRIVING VALUES. AR13 contextually responds to this Pragmatism by adjusting his VFR-Approach and serially Activating, Recalibrating, and Speaking to VCL in terms that are meaningful to SQH5. V-CLUSTER of Future-Proofed; Lifespan and Pragmatic Sustainability can be tied to above Pragmatism as well as V-CLUSTER or Balancing Budget for Completion / RISK-AVOIDANCE, and Cost-Effectiveness. See also K26 below re: VCL-Local Connections. The continuity of VCL-Investigating Possibilities, Potential (for benefit) also seems to be an Underlying/Prevailing theme which is applied to multiple scenarios, conditions, contexts.	**VALUES-CL**
LATER VALUES, CONTEXTUALLY ACTIVATED: V-CL-DMi, V-CL-CC-DM	***TV-SE-CONS/SEC: Cost-effectiveness; Saving Money [value-for-money?]*** ***TV-ST+SE: Trust*** ***IV-SE-CONS+SEC/PERS for IV-SE**: Balancing the Budget with Needs/wants for Project Completion (RISK-AVOIDANCE)*							
			3 CHANGES	*4 CHANGES*	*3 CHANGES*	*0 CHANGES*	*10 CHANGES: 7 up to CC; 3 in CC.*	
DECISIONS F-CL-DMi / DM / CC	Experienced QS but Inexperienced Residential Client High proportion of TV-ST, perhaps resulting from SQH5 as retired QS company director having opportunity and skill/ability to consider and articulate VCL.	**V-F FACT-BASED GOALS:** *'2x New houses at rear of large garden to existing house; to keep one and sell the other for retirement'* **VEILED VALUES-BASED GOALS and OBJECTIVES:** *'What's possible? What about GSHP?'*	**(+/-) TV-ST/SE REINFORCEMENT + CLARIFICATION-SEEKING:** *We want GSHP, but 'heard GSHP not functioning properly, not cost-effective' 'ASHP is more popular, cheaper, cost-effective'* **(+/-) TV-ST/SE REINFORCEMENT + CLARIFICATION-SEEKING:** *Heard "PVs lose their effect over a period of time."*	**(+) TV-ST AGREEMENT, DECISION:** *'CL trusts AR's views, technically feasible, go for large array of PVs; investigate costs of ASHP.'* **(+/-) TV-SE JUSTIFICATION:** Balancing cashflow & CapEX w/ lifespan interests: *"... its partly about cash flow and how much they can spend up-front, but also, they do have an eye to lifespan"* **(+/-) IV+TV-SE JUSTIFICATION**: 'THEORETICAL SUSTAINABILITIES: *"[they'll] go along with a certain amount up to planning, because they think that helps them secure planning."*	**(-) IV-SE RISK-AVOIDANCE**: *" 'They haven't got that money, they're not going to do it.' So, there's no point in antagonising them particularly by saying, 'well, you've really got to do it' when it's not reinforced [by them]."* **(-) IV/TV-SE DECISION-QUERY:** *"Can we consider removing PVs after planning?"* *AR13 COMPETENCE/fulfilling duties by raising all SUST points by DM: "we would be not doing our job if we didn't discuss all these things"*	**(+) TV-ST AGREEMENT, DECISION:** *'Keep the highly-efficient fabric; Keep PVs, but...'* **(-) IV+TV-ST DECISION, JUSTIFICATION:** *'Procure as D&B to save costs; reduce to smaller PV array'* *"Renewables are always the first to go"* Self fulfilling prophecy, or statement of fact based on experience?	VCL are evident in their F-CL-DM, wanting GSHP, seeking clarification on GSHP, ASHP, PVs, costs, planning regulations, etc. Sustainability is important to them, but it must be pragmatic and cost-effective towards Lifespan improvements. F-DM are consistently clarification- and boundary-seeking as evidence of VCL-Investigating Possibilities and Potential for Family Benefit. Decisions are consistent with and evidenced by their values. This is a good example of Decisions Reflecting Values, rather than values being coded to match the decisions, as evidenced in AR14-SQH5, in which comparison demonstrates similar results. Differences demonstrate different perceptions and Values.	**FRAMES-CL-DM+CC**
RELATIONAL ANALYSIS	EARLY V-CLARITY: HIGH, demonstrated by 3/4 continuously remaining in VH. EARLY V-COMPATIBILITY: MED-HIGH, demonstrated by VCL TV-ST Trust, and retention of SD measures but NOT AR-services past CC-High Tender Costs. VH-CONSISTENCY: HIGH shown in almost the same VCL composition throughout; VH-STABILITY: LOW/VERY LOW until CC, when VH stabilises around Cost-Control & Risk-Management, despite High V-Consist. RECEPTIVITY to CONTEXTUAL VFR: MED-HIGH, seen in movement of VH and POS DM RECEPTIVITY to CREATIVITY: MED-HIGH, seen initially in VALUES-BASED GOALS: "What's possible?" CL CONTEXT FAMILIARITY: Relatively HIGH, as Experienced QS but relatively LOW as Inexperienced Residential Client; VFR>DM-OUTCOME CONSISTENCY: Relatively HIGH throughout; AR13 recalibration of VFR-Approach in response to VH-Recalibration helps keep Relatively HIGH SD-Measures through CC, but loses out on fees at Construction.	Initial F-CL give AR clues to initial, fact-based goals aspirations to explore possibilities and potential--OTC values-- and initial sustainability priorities. Potential for Values-Framing appears with 'what's possible?' VCL-OTC and GSHP sustainability clues.	VH-Recalibration at design brief resulting from AR VFR REGULATORY LIMITATIONS to Recalibrates VCL-Sust to Pragmatic Sustainability, as potentially more SE, and Activates VCL-Cost-Effectiveness, thereby PRIMING importance of COST. VFR Contextually Deactivates VCL of Maintaining Local Connections due to **Necessity or Relevance Disestablishment**, or lack of relevance in the context. AR is UPPER-BOUNDARY-SETTING, laying out the Facts, being straightforward w/SQH5; engenders/permits SQH5 REINFORCEMENT + CLARIFICATION-SEEKING. **Self-fulfilling prophecy demonstrating AR13's 'Climate of Distrust and Disinterest** *Sows the seeds of DOUBT.*	VH-Recalibration resulting from AR VFR-Approach, of Honesty, Truthfulness, Fact embedded in VFR-JUSTIFICATIONS including Detail on Performance and Veiled Cost-Benefit; Activates VCL-Trust and Recalibrates VCL-Cost-Effectiveness and Future-Proofed; Lifespan as PRIORITY. VCL-Investigating Possibilities drops as the options become clearer but remains Active, likely because all items have not been resolved at that time. WHY DOES VCL-GETTING PLANNING for DREAM HOME NOT APPEAR??? SQH5 appears to appreciate AR13's VFR-Approach of Honesty-Fact-Justification; VFR-Justifications seem to **VH-Recalibrate in favour** of Pragmatic Sustainability **with the character** of Cost-Effectiveness, Future-Proofed Lifespan. *Earlier-primed VCL-COST-related remain an important feature of F-CL-DM. Likely also related to SQH5 as a QS.*	High tender costs cause immediate VH-Recalibration to account for and cope with 30% budget-overrun. VFR/FAR SD APPROACH-RECALIBRATION reminder of 'FABRIC FIRST' prevents SQH5 from losing the project and helps / permits them to seek cost-savings, pragmatically. High tender costs and AR13 SD APPROACH-RECALIBRATION provides SQH5 with Justification for Change and Reactivates VCL-Investigating Possibilities to ask for PV removal. VH is Stabilised here at CC when **VCL Cost, Risk and Benefit** are supported by Trust, Futureproofing, and Pragmatic Sustainability.	AR13 uses/VFR planning conditions & cost to change as PF leverage to retain SD, making it more difficult to remove once detail design is complete; SUCCESSFUL. AR13 uses/VFR speed of technological change as PF leverage to justify retaining PV's; SUCCESSFUL. AR13 SD-Approach and detailed justifications maintain relatively high SD, but with c40% reduction in PVs, which can be supplemented later. TV-SE Local Connections remains Contextually Deactivated due to CC context and well-developed design; likely to have informed the purchase of the site, where the progression of the project is a manifestation of that value which is still present but deactivated.	Despite mixed overall POSITIVE Outcomes in the Decision Analysis, the predominance of TV-ST and presence of VCL-Sustainability as an early TV, potentially combined with Retirement-focused TV-ST/SE Future/Lifespan, provided lines of argument for Serial VFR and very strong initial SD-DM-basis. Despite the increasingly NEGATIVE outcomes, OVERALL the 2x houses were MORE SUSTAINABLE than they would have been if there were no VFR and associated sustainability-friendly VFR-Approach adopted. IOW, SD-Outcomes started high because of VCL, and could have been worse were AR13 not sensitive to VCL and changes / VH-recalibrations through the design process. DM-OUTCOME PREDICTABILITY is relatively high as evidenced by RECEPTIVITY to CONTEXTUAL VFR: MED-HIGH and VFR>DM-OUTCOME CONSISTENCY: Relatively HIGH; likely contributed to by V-CLARITY and V-COMPAT HIGH, as well as V-AR13 and AR-CONTEXT-FAMILIARITY: HIGH.	**CASE RELATIONAL PATTERNS ANALYSIS**

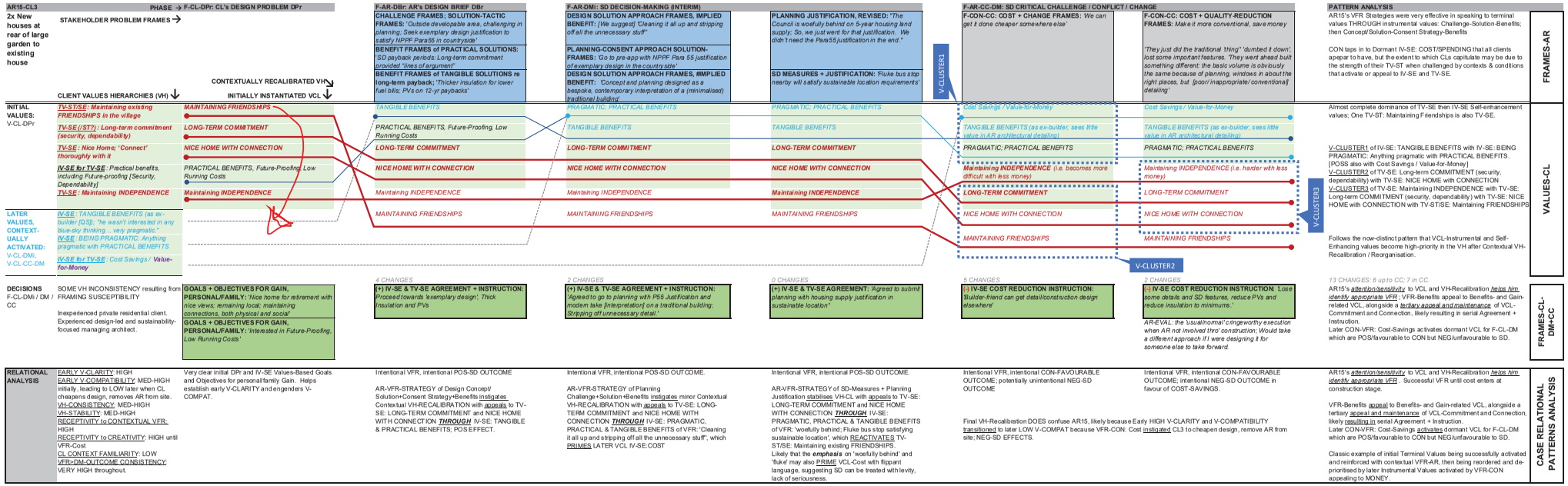

AR14-CL2
2x New houses at rear of large garden to exist. house
PHASE → F-CL-DPr: CL's DESIGN PROBLEM DPr
STAKEHOLDER PROBLEM FRAMES →
CONTEXTUALLY RECALIBRATED VH ↘
INITIALLY INSTANTIATED VCL ↓
CLIENT VALUES HIERARCHIES (VH) ↓
F-AR-DBr: AR's DESIGN BRIEF DBr
SD GOALS + OBJECTIVES: Long-term Energy Efficiency, passive design measures/earth sheltering, (overspecified) thick insulation
F-AR-DMi: SD DECISION-MAKING (INTERIM)
COST OF SD MEASURES: LCC V. CAPEX: Balancing building performance (benefits) and cost, i.e. LIFECYCLE cost (benefits) versus CapEx price/cost (positive angle, i.e. look at lifecycle not CapEx)
DETAILING FR, ref ARs HARD WORK: 'Working hard on façade, cladding and detailing beautiful long bricks'
CC-DM SD CRITICAL CHALLENGE / CONFLICT / CHANGE
COST-SAVINGS: CON Offering Cost-savings on foreign-made bricks: 'Ah, we can do these cheaper'
COST-SAVINGS: CON Offering Cost-savings on insulation; 'you don't need that much to achieve building regs'
PATTERN ANALYSIS ↓
FRAMES-AR
INITIAL VALUES: V-CL-DPr
IV-SE for TV-SE+CONS: Exploring / exploiting possibilities / maximising potential for 'lovely house' AAEQRA
TV-ST+CONS+OTC: Sustainability's Environmental Benefits; Environmental Sustainability (ST-UNIV-Nature, Concern; CONS-Security; nss; OTC- Self-Direction)
TV-ST+SE: Friendships; Maintaining Local Connections (ST-Benev-Caring; CONS-Security)
TV-CONS+SE: Legacy; Comfortable Retirement Lifestyle (CONS-Security; SE- Hedonism, Achievement)
LATER VALUES, CONTEXT-UALLY ACTIVATED: V-CL-DMi, V-CL-CC-DM
IV-SE for TV-CONS+SE (+OTC?) Best Value Performance & Energy Efficiency within budget (pointing at lifecycle cost-benefit) (CONS-Security, SE-Power, Achievement? OTC-Self-Direction?)
IV-SE for TV-CONS+SE: INTELLIGENT SPENDING: Well-researched, balanced, controlled spending to achieve Value-For-Money
IV-SE for TV-CONS+SE(+ST): COST-BALANCING to Fulfil Design Intent (incl. Sustainability Measures) Cost-Effectively
IV-SE for TV-CONS+SE: BALANCING (Competing) AGENDAS for Project Completion
TV-CONS+SE: (Achieving) Value-for-money
Maximising Potential for Lovely House
Sustainability's Env. Benefits
Friendships; Maintaining Local Connections
Legacy; Comfortable Retirement Lifestyle
Sustainability's Env. Benefits
Best Value Performance & Energy Efficiency
Maximising Potential for Lovely House
Friendships; Maintaining Local Connections
Legacy; Comfortable Retirement Lifestyle
INTELLIGENT SPENDING to achieve Value-for-money (VFM)
Best Value LIFECYCLE Performance & Energy Efficiency within Budget (cost-benefit)
Sustainability's Env. Benefits
COST-BALANCING to Fulfil Design Intent Cost-Effectively
Maximising Potential for Lovely House
Friendships; Maintaining Local Connections
Legacy; Comfortable Retirement Lifestyle
BALANCING (Competing) AGENDAS for Project Completion
INTELLIGENT SPENDING to achieve Value-for-money (VFM)
COST-BALANCING to Fulfil Design Intent Cost-Effectively; (Realising) Cost Savings
Value-for-money
Maximising Potential for Lovely House
Best Value LIFECYCLE Performance & Energy Efficiency within Budget (cost-benefit)
Sustainability's Env. Benefits
Friendships; Maintaining Local Connections
Legacy; Comfortable Retirement Lifestyle
INTELLIGENT SPENDING to achieve Value-for-money (VFM)
COST-BALANCING to Fulfil Design Intent Cost-Effectively; (Realising) Cost Savings
BALANCING AGENDAS for Project Completion
Best Value LIFECYCLE Performance & Energy Efficiency within Budget (cost-benefit)
Value-for-money
Maximising Potential for Lovely House
Sustainability's Env. Benefits
Friendships; Maintaining Local Connections
Legacy; Comfortable Retirement Lifestyle
VALUES-CL
Ultimately there are several underlying or prevailing / overarching TVs which contextually manifest or present themselves in slightly different forms as the project progresses, i.e. CONTEXTUAL RECALIBRATION based on problems framed to him and the extent to which PF is calibrated as a CONTEXTUALLY CURRENT AND RELEVANT V-F. The key is for AR to recognise the prevailing theme or PRINCIPAL VALUES DRIVERS.
TV-Value-for-money and TV-Lovely House are THE UNDERLYING TV-SE driving the last three interactions
All VCL ELICITED are TERMINAL and many are about OTC, ST, and UNIV.
All VCL CONTEXTUALLY ACTIVATED are Instrumental and about some form of Conservation and are ultimately the VCL-DM.
That this client, SQH2, is a retired Quantity Surveyor is evident in the detail refinements AR14 was able to recall at each stage about his values around Spending, Cost, Savings, Benefits, Performance, and Value, which is not evident in other client's VH.
CL DECISIONS: F-CL-DM F-CL-CC F-CL-CC-DM
IV-ST+SE for TV-SE Best LIFECYCLE Performance & Energy Efficiency w/ in Budget (cost-benefit)
VALUES-BASED GOALS and OBJECTIVES: 'Beautiful, liveable home' in beautiful surroundings, maintaining local connections; "some aspirations of sustainability"
(+) INSTRUCTION: 'Show us what you can do, what's possible on our site…'
1 CHANGE
(+) AGREEMENT, INSTRUCTION & TV-ST JUSTIFICATION: 'He agreed for us to build both houses into the ground slightly, part of the environmental benefits.'
(+) AGREEMENT, INSTRUCTION & BOTH TV-ST and TV-SE RFI for COST: He agreed to put large PV arrays, thick insulation on both; investigate costs and benefits of GSHP.
4 CHANGES
(+) INSTRUCTION & BOTH TV-ST and TV-SE VB JUSTIFICATION: 'Triple glazing on his house, double glazing on market-house to avoid blowing the budget on either.'
(+/-) INSTRUCTION & TV-ST, IV-SE & TV-SE JUSTIFICATION: 'GSHP 'too expensive'; ASHP cost-effective (value-for-money; cost-benefit in favour of balanced CapEx v. LCC).'
4 CHANGES
(+/-) INSTRUCTION & IV-SE for TV-SE JUSTIFICATION: 'Proceed to tender with foreign-made long-module bricks (to maintain design intent)'
(-) INSTRUCTION & IV-SE for TV-SE JUSTIFICATION: 'Need to balance costs for expensive details'
(-) INSTRUCTION & IV-SE for TV-SE JUSTIFICATION: 'To save money, AR appointed up to tender, but not construction.'
4 CHANGES
(+/-) INSTRUCTION & IV-SE for TV-SE JUSTIFICATION: "Foreign-made long bricks 'too expensive', local contractor to use standard/conventional local bricks: "the client didn't want to go that far.""
(+/-) INSTRUCTION & IV-SE for TV-SE JUSTIFICATION: 'Accepting CON cost-savings offer on insulation: "Contractor reduced the insulation, but it was still a lot better than the standard regs"'
13 CHANGES: 9 up to CC; 4 in CC.
FRAMES-CL-DM+CC
The critical trigger, lever, or turning point was AR insistence on expensive detailing with long-module bricks in the face of prior F-CL-DMi increasingly raising the subject of budget, cost and increasingly making decisions on the basis of VFM and cost-related IV-SE and TV-SE. Ultimately VFM defined by balanced spending to achieve project completion was the principal TV-SE on which CL2 can be said to have made many, if not most, of the later decisions that 'stuck', which was driven by TV-SE+CONS: Personal/Family Gain (new house)
RELATIONAL ANALYSIS →
Early V-CLARITY: HIGH but decreasing after DMi with VFR introduction of COST-RELATED VFR activate QS-Related VCL
V-COMPATIBILITY: HIGH through until Tender when CL tires of hearing about Expensive Details and Costs return higher than expected.
VH-CONSISTENCY: VARIABLE, contextually changing with Cost-Related VFR at DMi and CC, which resonate QS
VH-STABILITY: MEDIUM to MED-LOW
RECEPTIVITY to CONTEXTUAL VFR: MED-HIGH
RECEPTIVITY to CREATIVITY: MED-HIGH
RECEPTIVITY to SD: MED-HIGH / HIGH
CL CONTEXT FAMILIARITY: HIGH, as a QS but not as a CL
VFR>DM-OUTCOME CONSISTENCY: MEDIUM; Early F-AR/VFR elicit POS DM-EFFECTS, transitioning into both (-) (+/-) DM-EFFECTS
Early instruction to demonstrate possibilities indicates MED-HIGH RECEPTIVITY to CREATIVITY, but only to a point, at which CL-BOUNDARY is located later with Expensive Details and Costs.
Early values-based DM justification suggests AR is accurately values-framing and gives early indication that CL2 is disposed to VBDM.
This decision on siting+massing is one for which it becomes increasingly challenging to reverse practically and evidences SQH2 early commitment to SD. See RA@DMi2.
This early request for LCC-benefit analysis/CBA provides early clue as to A) CL2 cost approach, and B) where CL2 is likely to go when presented with a challenge.
AR skill is needed in navigating around and listening to contextually recalibrating values-statements.
VCL-Best Value LIFECYCLE Performance & Energy Efficiency PRIMES later VFM as standalone VCL.
The fact that CL2 has decided to keep any triple glazing and any Heat Pumps at all suggests that he continues to make TV-ST VBDM.
CL's request for LCC-benefit analysis/CBA leads to AR starting to talk about money and activates many of CL's QS-related VCL. Earlier speaking in AR's language, now speaking in CL's QS language.
Unanticipated costs for good design and AR insistence on expensive details create challenge for CL2, to which AR14 is unattuned and/or somewhat oblivious. POSITIVE instruction for design-led AR, leads to NEGATIVE OUTCOMES because it leads to a NET INCREASE in long-distance transport CO2 emissions and thereby broader sustainability. This COST/CONFLICT leads to challenge of earlier CL-Commitment to SD-Measures that can be reduced, changed, or eliminated; resulting in Any SD that can be challenged, are re-evaluated and adjusted accordingly.
Ditching the AR permits more opportunity for future downgrading of SD specifications, justified as cost-savings to achieve VFM and Completion.
Here VCL-BALANCING (Competing) AGENDAS for Project Completion is activated because AR keeps banging on about beautiful long-module bricks and other expensive details; this thereby appears to begin to WORRY the CL about Cost. This activates VCL-TV-VFM and it enters the VH as standalone VCL.
Agendas are no longer competing because the AR has been dismissed, thereby Balancing Agendas takes on a new character once CON is on board.
NEGATIVE instruction for design-led AR leads to loss of expensive bricks, but POSITIVE OUTCOMES because it leads to a net decrease in long-distance transport CO2 emissions and thereby broader sustainability.
F-CON about Insulation and Meeting Regulations re-activates VCL-Best Value LIFECYCLE Performance & Energy Efficiency within the budget as evidence of the rejoinder about budget-related aspects of Best Value and VFM.
DM-OUTCOME PREDICTABILITY starts high but decreases in the middle @ DMi2: as a QS, AR14 should have been able to predict that DMi1 outcome indicated the importance/priority of VFM. Also as a QS, SR14 should have known that expensive details were unlikely to pass muster.
Another example of TV-ST values espoused at DBr but later V-CL-DM were nothing like them and all Instrumental Cost- and Conflict-related when Challenged.
It is logical that a private client would make decisions initially based on their Values, and later based on cost-related values. In this case, it can be said that the TV-Value-for-money and TV-Lovely House were the underlying driving values, which could have been spotted during DBr with the right approach to VFR and VBDM.
CASE RELATIONAL PATTERNS ANALYSIS

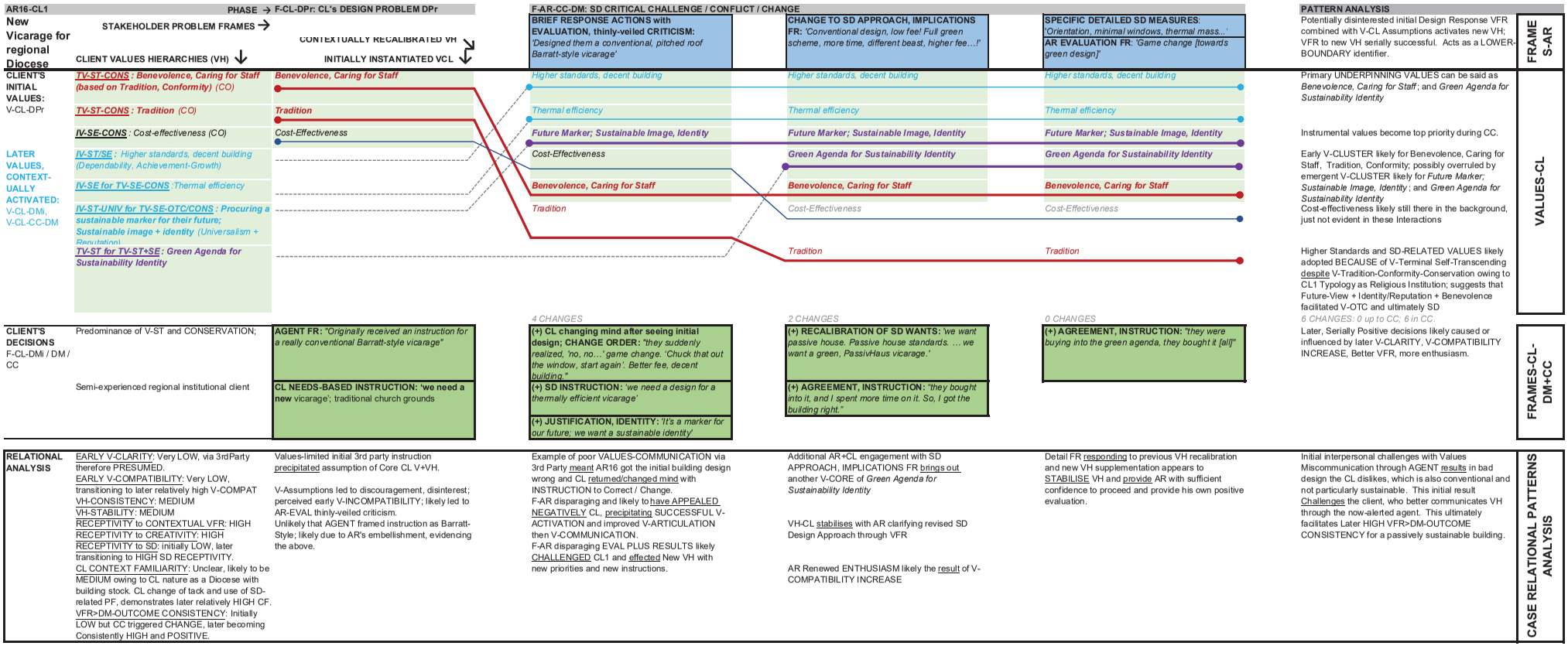

AR14-CL3
PHASE → F-CL-DPr: CL's DESIGN PROBLEM DPr
F-AR-DBr: ARs DESIGN BRIEF DBr
F-A-DMI: SD DECISION-MAKING (INTERIM)
C-DM SD CRITICAL CHALLENGE / CONFLICT / CHANGE
PATTERN ANALYSIS
New sheltered housing block in Conservation Area
STAKEHOLDER PROBLEM FRAMES →
CL VALUES-FRAME, ∴ SUCCESSFUL
CL VALUES-BOUNDARY-FRAME, ~ SUCCESSFUL
CONTEXTUALLY RECALIBRATED VH
INITIALLY INSTANTIATED VCL
CLIENT VALUES HIERARCHIES (VH)
OBJECTIVES TO FULFIL CLIENT VALUES-BASED GOALS: HIGHER STANDARDS & QUALITY: 'We're working towards Good Quality & Higher Standards to get planning'
BOUNDARY-FRAMING: #SDDM TACTICS, INTRO IDEAS: Raised Idea of Greywater Recycling GWR
DESIGN APPROACH: 'We're working with/environment: Building-/landscape connection: Environmental'
PROGRESSING THE DESIGN, Storage Location / Appearance: 'It doesn't look good'; and Landscape Effect: 'baking into it'
CL VALUES-FRAMES, ∴
V-F DESIGN-DEV / PROGRESS FRAMING, OPEN-ENDED, INTENTIONAL: Progressing the design, renewables; 'okay, renewables: what do you want to do about renewables?'
What's intentional is the framing
V-F DESIGN-DEV / PROGRESS FRAMING: OPEN-ENDED, BOUNDARY-LOCATING, UNINTENTIONAL: Progressing the design, MEP Systems; 'What do you want to do about the M&E system (heating and ventilation)?'
V-F DESIGN-DEV / PROGRESS FRAMING: BOUNDARY-LOCATING, UNINTENTIONAL: Progressing the design, Structural Frame / Thermal Mass: 'What do you want to do…?'
CL VALUES-NEUTRAL-FRAMES, open-ended, intentional, speaking to EBDM; ~ SUCCESSFUL
F-PC-CC: DESIGN CHANGES for Improved Chances at Planning: "Planning Consultant (PC) always saying 'oh no, you need to try adding more
F-AR-CC: #C HALLENGE-FRAMING: "Overexcited Planning Consultant (PC) who thinks he's a designer"
F-AR-CC-DM: #CH ALLENGE-RESPONSE and VFR: 'Simple, well-detailed'; and "there's a limit' [to the quantum of forms, materials in one project]'.
F-AR-CC-DM: #DM-JUSTIFICATION-FR: 'Cheaper, more sustainable, less waste, because he's not doing lots of materials'
CL VALUES-
FRAMES-AR
INITIAL VALUES: V-CL-DPr
This VH is based on the order in which the AR responded to V-CL ['What's
Good Quality Bldgs + Added Value
Achieving Higher Standards
Site Maximisation
Profit with Added Value
Landscape Appreciation
Conservation Appreciation
SIMPLICITY for Cost-effectiveness
Site Maximisation
Profit with Added Value
Good Quality Buildings+Added Value
Achieving Higher Standards
Landscape Appreciation
Conservation Appreciation
Landscape Appreciation
Conservation Appreciation
Good Quality Bldgs + Added Value
Experience-based decision-making
SIMPLICITY for Cost-effectiveness
Profit with Added Value
Achieving Higher Standards
Site Maximisation
Experience-based decision-making
Site Maximisation
SIMPLICITY for Cost-effectiveness
Profit with Added Value
Landscape Appreciation
Conservation Appreciation
Good Quality Bldgs + Added Value
Achieving Higher Standards
SIMPLICITY: Avoiding Overcomplicated Measures for Cost-effectiveness
Profit with Added Value
Experience-based decision-making
Site Maximisation
Landscape Appreciation
Conservation Appreciation
Good Quality Bldgs + Added Value
Achieving Higher Standards
SIMPLICITY: Avoiding Overcomplicated Measures for Cost-effectiveness
SIMPLICITY: Right info, Right time.
Site Maximisation
Profit with Added Value
Experience-based decision-making
Landscape Appreciation
Conservation Appreciation
Good Quality Bldgs ++Value
Achieving Higher Standards
SIMPLICITY: Avoiding Overcomplicated Measures for Cost-effectiveness
SIMPLICITY: Right info, Right time.
EBDM: Making Progress, Securing Consent [CO]
Delivering Profit + Added Value (as res/developer)
Delivering Good Quality Bldgs + Added Value
Site Maximisation
Landscape Appreciation
Conservation Appreciation
Achieving Higher Standards
PROFITABILITY W/ADDED VALUE, and SIMPLICITY FOR COST-EFFECTIVENESS ARE THE UNDERLYING TV-SE's DRIVING THE LAST
VALUES PREVIOUSLY RISEN IN THE VH REMAIN IN THAT ORDER, DESPITE THE CURRENT F-AR NOT
Is this the CL value-framing to and resonating with the AR [?!?] or do they have COMPATIBLE values related to SIMPLICITY, but for different reasons? CL for cost-
Several V-CL manifest, take on contextually-relevant colouring or characterisation, and contextually re-order in response to the problems framed to him.
For example, Simplicity for Cost-effectiveness (S4CE), plainly coded from F-CL-DMI, also manifests as Avoiding Overcomplicated Measures (AOM), and then later Over-specific, Technical Details of Limited Interest (OSTDLI). Interestingly, F-AR-CC-DM 'comes from' the architects values of design quality and aesthetic value, whereas the values of the client to which they speak, V-CL-CC-DM, are Simplicity for Cost-effectiveness (S4CE). This points to the fact that AR and CL have COMPATIBLE values related to SIMPLICITY, but for different reasons--the Architect for design aesthetics as a self-transcending terminal value, and the Client for cost-effectiveness as a self-enhancing terminal value.
All VCL ELICITED are TERMINAL and many are about OTC, ST, and UNIV.
All VCL CONTEXTUALLY ACTIVATED are Instrumental and about some form of Conservation
VALUES-CL
LATER VALUES, CONTEXT-UALLY ACTIVATED: V-CL-DMI, V-CL-CC-DM
IV-SE for TV-SE-CONS: SIMPLICITY for Cost-effectiveness (CONSERVATION-Conformity, Security, SE-Power)
IV-SE for TV-SE-CONS: EXPERIENCE-BASED DECISION-MAKING; Appreciating what's necessary to progress, secure consent [EL] (CONS-Security SE-Power)
IV-SE for TV-SE-CONS: SIMPLICITY: Avoiding Overcomplicated Measures; BOUNDARY LIMIT [CO]
IV-SE for TV-SE-CONS: SIMPLICITY: Right info, Right time. Over-specific, technical details of limited interest at Planning; BOUNDARY LIMIT [CO]
IV-SE for TV-SE-CONS: EBDM: Making Progress to Secure Planning Consent [CO]
CL DECISIONS: F-CL-DM F-CL-CC F-CL-CC-DM
VALUES-BASED NEEDS / GOALS / OBJECTIVES: 'Good Quality / Beyond Minimums / Beyond what's Necessary'
VALUES-BASED NEEDS / GOALS / OBJECTIVES: 'Maximising Site whilst Respecting Conservation Area'
EARLY CLUE on CL design decision
3 CHANGES
IV-SE for TV-SE TACTICS, JUSTIFICATION; FAVOURING GAIN: Leave out greywater recycling in favour of conventional water supply and drainage; Expensive & overcomplicated
4 CHANGES
(+) TACTICS, FOR ADDED VALUE/QUALITY: 'Remove one flat for communal storage'
(+) TV-ST JUSTIFICATION: 'Retaining landscaping is important'
6 CHANGES
(+) IV-SE for TV-SE AGREEMENT/INSTRUCTION: Cautious Openmindedness: Ok, why not put PVs on the flat roofs.' / (No justification provided, but assumed as VCL-EBDM+Site Maximisation)
2 CHANGES
IV-SE DECISION and JUSTIFICATION: 'Combi-boilers for easy 'legal separation'
Combi-boilers could be viewed erroneously as more sustainable because they are easy and inexpensive to repair, VS CHP + DH or even Solar Thermals (i.e. ST + top-up boiler)
2 CHANGES
(+) IV+TV-SE V-B DM and JUSTIFICATION: Structural solution (conc. frame) decision on cost (i.e. not appropriateness for 'live/ward' site or sustainability)
3 CHANGES
(+) IV-SE V-B AGREEMENT and JUSTIFICATION: 'Keep it Simple, well-detailed (for cost-effectiveness)'; 'the client's bought into that 'simple, well-detailed' approach'
20 CHANGES: 17 up to CC; 3 in CC.
ARs later Values-neutral and open-ended frames provide an opportunity for F-CL-DM based on IV+TV-SE Cost-Effectiveness and/or Profit. There is no purposeful, intentional framing to values. Open-ended questions without specific targeting of values permits F-CL-DM to manifest cost-related V-CL without challenge or pressure from F-AR or Values-Frames.
FRAMES-CL-DM+CC
RELATIONAL ANALYSIS
Early V-CLARITY: HIGH initially, continuing through to CC: POS EFFECTS, thereby permitting:
V-COMPATIBILITY: HIGH initially, continuing through to CC: POS EFFECTS, thereby permitting:
VH-CONSISTENCY: LOW EARLY CONSISTENCY; some initial values-framing reorders DM values, which LATER settle into a relatively stable DM-VALUES CONSISTENCY.
VH-STABILITY: MED-LOW
RECEPTIVITY to CONTEXTUAL VFR: HIGH
RECEPTIVITY to CREATIVITY: MED-HIGH
RECEPTIVITY to SD: MEDIUM to MED-HIGH
CL CONTEXT FAMILIARITY: VERY HIGH - experienced developer.
VFR=DM=OUTCOME CONSISTENCY: MEDIUM to MED-HIGH, both POS and NEG EFFECTS.
HSRL3 lays almost all TV out on the table from the start, nearly all of which are ST; well-articulated VH adds to EARLY V-CLARITY and promotes accessibility for AR14 V-COMPAT evaluation.
Intentional VFR, NEG OUTCOME.
AR VFR-BOUNDARY SD-measure activates / appeals to V-CL SIMPLICITY for Cost-effectiveness and recalibrates VH temporarily; NEG EFFECT.
First interaction is a simple Listen--Playback--vResonation--Favourable Decision, similar to SQH2.
Serial temporary VH-Recalibration doesn't confuse AR14, likely because Early HIGH V-CLARITY and V-COMPATIBILITY. See also Relational Pattern Analysis.
Intentional VFR, intentional POS OUTCOME
AR VFR Loss and Appearance Effects activates / appeals to V-CL Environment, Conservation and recalibrates VH temporarily; POS EFFECT.
Releases V-CL Site Maximisation.
AR-FR to non-money VCL recalibrates the VH and affects the DM-OUTCOMES by appealing directly to TV-ST+SE Landscape, Conservation.
SECOND interaction continues Listen--Playback--vActivation--Favourable Decision. However, AR seems to perceive this continuity as a positive win-win and erroneously assumes DM-VALUES CONSISTENCY.
NIL VFR, POS OUTCOME
Values-Neutral and Open-Ended frames about Renewables activates / appeals to VH Experience-based decision-making + Site Maximisation + Profit with Added Value which facilitate VBDM PVs on roof; POS EFFECT.
IOW, As soon as values-neutral V-N, open-ended frames OEF are employed, money/profit-based V-SE begin influencing CL-DM. Yet, VH stabilises with V-N OEF to, HSRL3.
Significant missed opportunities to values-frame; Values-Neutral and Open-Ended Frames provide an opportunity for CL-DM based on VCL-CORE. If given the opportunity to choose, HSRL3 will VBDM based on VCL SIMPLICITY and PROFITABLE ENTERPRISE as priority, with EBDM and ADDED VALUE supporting.
**CL3-HSRL3 RECEPTIVITY to CONTEXTUAL FR: CONTINUES without VFR but with 3x Values-Neutral (V-N), Open-Ended Frames (OEF), leading to continued, but more stable, contextual VH-RECALIBRATION, leading to decisions based more-often on HSRL3-VCL-CORE SIMPLICITY and MONEY/PROFIT-based TV-SE values; this is about the PRESENCE and QUALITY of FR and VFR, and to which VCL they are appealing; which demonstrates how V-N OEF affect the VH-RECALIBRATION and DM-OUTCOMES, as shown here; and that It's possible to affect CL-VH and DM-OUTCOMES with both VFR and V-N OEF.
VH stabilises when HSRL3 with V-N OEF. PFR subjects (i.e. Renewables, HVAC, Structural Frame), recalibrate VH slightly with CONTEXT-SPECIFIC VALUES. With V-N OEF this also demonstrates VH-RECALIBRATION.
NIL VFR, NEG OUTCOME.
With HVAC, it becomes more about VCL-Simplicity + Money + EBDM, i.e. what's worked before.
VCL-Simplicity takes on a new character about Avoiding Overcomplication + MONEY.
NIL VFR, POS OUTCOME for NEG REASONS.
With Structure, VCL-Simplicity + Money + EBDM are all PRIMED and FRESH, so contextual PFR-CONTENT reorders VH.
Disinterest in wrong detail, wrong time, new VCL activated, which is a manifestation of VCL-CORE Simplicity.
Intentional PC-VFR, NEG OUTCM
Intentional AR-VFR; POS OUTCOME.
AR-VFR CC-FR continues to maintain the appeal to VCL-Simplicity successfully.
CC activates VCL-Make Progress towards Consent whilst PRIMING the re-activation of Good Quality Buildings+Value
VCL-EBDM takes on a new character about Making Progress, Securing Consent.
AR14 finishes the conversation by catering or pandering to VCL-Simplicity successfully and giving justifications that appeal to that VCL.
Just-prior PRIMING plus CC activates VCL-Profitability + Deliverability.
AR14-VFR 'Simple, well-detailed' appeals to both VCL-Simplicity and VCL Good Quality+Value to make a good argument for an easy win.
Strong example of Value-Priming + VFR to earlier established VH.
Serial temporary VH-Recalibration doesn't confuse AR14, likely because Early HIGH V-CLARITY and V-COMPATIBILITY. AR14 has a picture in his head about VH-HSRL3 and is comfortable--perhaps OVERCONFIDENT--to proceed with FDM; open-ended, possibly in the expecation that HSRL3 will naturally decide in favour of SD and Good Design based on AR-Intuitive Assessment of VH-HSRL3.
Suggests that V-CLARITY could be more significant for VFR-VBDM outcomes. Also lends credence to the concept of V-CLARITY MAINTENANCE: maintaining V-CLARITY is as important as VFR for VBDM POS OUTCOMES.
Confusion can be detected when VFR to wrong values for desired outcomes or NIL VFR.
RECEPTIVITY to CONTEXTUAL FR CONTINUES without VFR but with 3x Values-Neutral (V-N), Open-Ended Frames (OEF). This suggests that the PRESENCE and QUALITY of FR and VFR and to which VCL they are appealing is significant for CL-DM. It demonstrates how BOTH VFR and V-N OEF affect the VH-RECALIBRATION and DM-OUTCOMES, as shown here.
CASE RELATIONAL PATTERNS ANALYSIS

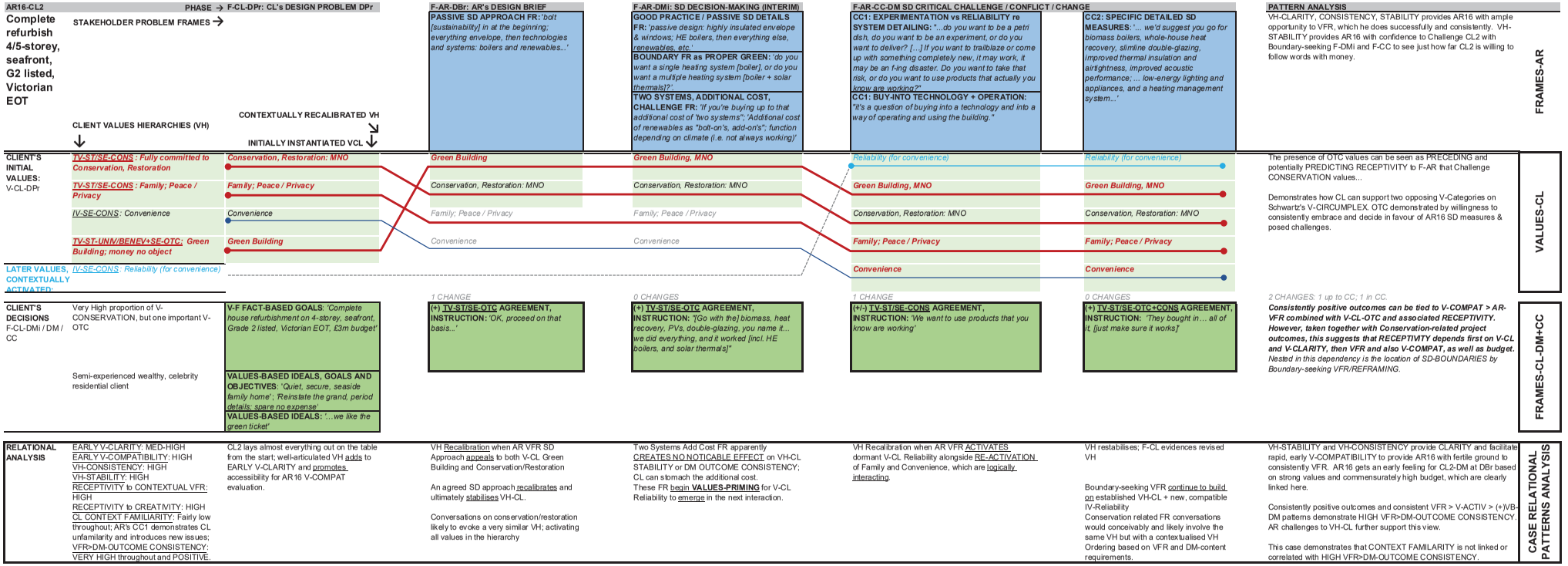

AR14-CL6
PHASE → F-CL-DPr: CL's DESIGN PROBLEM DPr
Traditional Dower house
STAKEHOLDER PROBLEM FRAMES →
CONTEXTUALLY RECALIBRATED VH ↘
CLIENT VALUES HIERARCHIES (VH) ↓
INITIALLY INSTANTIATED VCL ↓
F-AR-DBr: AR's DESIGN BRIEF DBr
F-AR-DMi: SD DECISION-MAKING (INTERIM)
F-nn-CC-DM SD CRITICAL CHALLENGE / CONFLICT / CHANGE
PATTERN ANALYSIS
CLARITY-SEEKING FRAMES: Unclear/Questioning WHY 'mock Victorian; daft'; foreign route?' [of CL6 preferences in design style, incompatible CL motivations or V-CL-PTV]
SENSE-MAKING FR: 'He wants a lovely house, but none of it makes sense to me to be honest'
MISSED OPPORTUNITY: 'Completely missed out on the whole sustainability stuff'
NOT SD THINKING / MISSED OPPORTUNITY: 'he's not really thinking in sustainable terms either—I think it's a missed opportunity, which is frustrating.'
SPECTRUM BOUNDARY JUDGEMENT: "It's just so far from the spectrum that you don't, aah, I didn't even try and bother [making sustainability suggestions]"
DETAILING QUALITY AND TIME, EVALUATION, RECOMMENDATION: 'Spent lots of time detailing stairs', so we suggested he go with a 'Specialist contractor locally who do lovely stairs, sustainable timber…'
F-AR-CC: #HIGH COST FR: High costs, but prior awareness: 'Costs came out high, but CL already aware of the costs…'
F-AR-CC: #EXPENSIVENESS FR: Brief/Spec reduction because of Cost / Expensiveness: 'things are more expensive than he thinks, then there's less money for some elements'
F-AR-CC-DMi: #CHALLENGE FR: Concern about contractor with limited capability; 'they just didn't seem up to it, out of their comfort zone…'
F-CON-CC: #COST SAVINGS TV-SE VALUES-FRAMES: 'My mate can save you money on the stairs'
FRAMES-AR
INITIAL VALUES: V-CL-DPr
TV-SE-OTC+CONS : 'Wants 'lovely house': Appreciating Aesthetic & Emotional Qualities of [good] Resi Architecture (AAEQRA), Money No Object'
TV-SE-CONS : Traditional, conservative lifestyle; Traditional house (appearance)
Lovely House / AAEQRA, Money No Object
Traditional, Conservative Lifestyle and Traditional House
Appropriate Design Styling (for Lovely; Traditional House)
Lovely House / AAEQRA
Traditional, Conservative Lifestyle and Traditional House
Appropriate Design Styling (for Lovely; Traditional House)
Lovely House / AAEQRA
Traditional, Conservative Lifestyle and Traditional House
Benefits of Cost-Effectiveness
Appropriate Design Styling (for Lovely; Traditional House)
Lovely House / AAEQRA
Traditional, Conservative Lifestyle and Traditional House
Benefits of Cost-Effectiveness
Cost-Control for Project Completion
Lovely House, but NOT AT ANY COST
Traditional, Conservative Lifestyle and Traditional House, but NOT AT ANY COST
Cost-control to Avoid Overspending
Saving Money
Cost-Control for Project Completion
Benefits of Cost-Effectiveness
Appropriate Design Styling, but NOT AT ANY COST
Lovely House, but NOT AT ANY COST
Traditional, Conservative Lifestyle and Traditional House, but NOT AT ANY COST
VALUES-CL
LATER VALUES, CONTEXT-UALLY ACTIVATED: V-CL-DMi, V-CL-CC-DM
IV+TV-SE-CONS+OTC : Appropriate Design Styling (for Lovely; Traditional House)
IV-SE for TV-SE+CONS-Security-Personal-Financial : Benefits of Cost-Effectiveness (for saving money)
IV-SE for TV-SE+CONS-Security-Personal-Financial : Cost-Control for Project Completion
IV-SE for TV-SE+CONS-Security-Personal-Financial : Cost-control to avoid overspending / Save money
TV-SE+CONS-Security-Personal-Financial : Saving money
CL DECISIONS: F-CL-DM F-CL-CC F-CL-CC-DM
VALUES-BASED GOALS and OBJECTIVES: 'Owns a big house, wants to build a TRADITIONAL-STYLE dower house in the gardens for him and his partner whilst his son took the main house' 'wants a lovely house'
1 CHANGE
(-) TV-ST for TV-SE CLARITY-SEEKING, lacking conviction: 'Changing mind on style / materials: first mock Georgian. Then Gothic--revivalist Gothic. Then Georgian.'
1 CHANGE
(+) TV-ST for TV-SE (TV-SE) + JUSTIFICATION (TV-SE): 'Georgian-Victorian type thing' little more cost-effective [including conventional brick façade with recon. stone detailing; Timber Double-glazing…]
1 CHANGE
(+) TV-ST for TV-SE AGREEMENT: 'Go with the specialist contractor for high-quality, sustainable timber stair…'
2 CHANGES
(-) IV-SE-EVAL: Costs 'more expensive than I thought'
(-) IV-SE JUSTIFICATION: 'Sustainable timber stair 'too expensive'; 'Going to something cheaper; Budget taken up elsewhere'
(-) IV-SE AND TV-SE COST SAVINGS JUSTIFICATION: REDUCE AR SITE PRESENCE: AR 'shadowing / slightly removed' from site DM process
3 CHANGES
(-) TV-SE VALUES-BASED DM + JUSTIFICATIONS 'Cost-saving Decisions made on site, made changes to details not originally agreed'
(-) TV-SE VALUES-BASED DM + JUSTIFICATIONS: 'Specifications and insulation reduced to minimum regulations to save money'
7 CHANGES: 3 up to CC; 4 in CC
FRAMES-CL-DMi+CC
RELATIONAL ANALYSIS
Is this about the FREQUENCY or the QUALITY or the RELATIONSHIPS?
Early V-CLARITY: MED-LOW initially, with unforeseeable V-COST later PRIORITISED; NEG EFFECTS because of:
V-COMPATIBILITY: VERY / LOW early initially and continuing through into CC; NEG EFFECTS
VH-CONSISTENCY: Some early consist.; initial values-framing DIFFICULTIES (negative, hesitant) reorders DM VH, which LATER settles into a relatively stable DM-VH CONSISTENCY;
RECEPTIVITY to CONTEXTUAL VFR: LOW early, MED later, activates cost-related DM values
RECEPTIVITY to CREATIVITY: LOW; NEG EFFECTS
RECEPTIVITY to SD: LOW, disengaged; NEG
CL CONTEXT FAMILIARITY: Fairly LOW throughout; demonstrated by DM to remove AR @ CONST.; NEG VFR>DM-OUTCOME CONSISTENCY.; MED-HIGH and predom. NEGATIVE OUTCOMES
Few initial VCL are perceived by AR14 because V-COMPAT Very/LOW. Sees nothing in common except the significance of a Lovely House, and later Appropriate Design Styling to achieve it.
Disinterested, unconvincing and unclear F-AR-DBr frames breed unclear and changing F-CL-DM.
Begins pattern of LOW DM-OUTCOME CONSISTENCY
Cost-effective FR primes later F-CL Costs More Expensive.
Cost-effectiveness instrumental values become evident here, likely due to AR ambivalence; affecting later design and sustainability decisions.
V-INCOMPATIBILITY leads to AR DISINTEREST which subsequently leads to Frustration, Discontentment, Disaffect, and thereby lack of willingness and thereby lack of engagement on SD and NIL VFR.
NIL VFR has NIL EFFECT, but DM-OUTCOME is MARGINALLY POSITIVE.
(+)SD-Outcomes ignored by AR, due to V-INCOMPAT.
F-CL-VBDM provide first CLUES about V-Cost; initially starts Low, increases later with contextual VFR.
VH remains stable, where two V-CL become contextually DORMANT. CL-DM evidences two principal V-CL in VH, possibly in appreciation of detailing time; more likely that it appeals to VH.
FIRST EXAMPLE OF EFFECTIVE VFR and VFR > DM-OUTCOME CONSISTENCY; POSITIVE SD EFFECT.
Stereotypical Budget Reality vs. Perception dichotomy explains Spec reduction and more drastic AR removal.
Frames of Budget Reality vs. Perception myopia problem combined with Contractor challenged by project quality and complexity triggered VH recalibration and reprioritisation of COST- and SAVINGS-RELATED VALUES.
EFFECTIVE VFR and VFR > DM-OUTCOME CONSISTENCY; NEGATIVE SD EFFECT.
The extent of later PRIORITISED V-COST is unforeseeable by AR who is potentially BLINDED by perception of WEALTH and conflates Wealth with 'Money No Object' and lack of Cost-Savings prioritisation; resulting in AR prematurely disregarding V-CL Cost Effectiveness, which primes later V-CL Saving Money, Cost Control.
EFFECTIVE VFR and VFR > DM-OUTCOME CONSISTENCY; NEGATIVE SD EFFECT.
ARs later Values-NEGATIVE frames and lack of gripping, meaningful, or resonant VFR provide an opportunity for F-CL-DM based on IV+TV-SE Cost-Effectiveness, Cost-Control and ultimately crescendoing to the unimpeded manifestation of TV-SE Saving Money. There is no purposeful, intentional framing to values. Almost no specific targeting of values other than (expensive) design-related values permits F-CL-DM to manifest cost-related V-CL without challenge or pressure from F-AR or Values-Frames, particularly exacerbated by the contractor's perceived and framed limited capability.
Ultimately, V-INCOMPATIBILITY played a central role in germinating Disinterest, which subsequently led to Frustration, Discontentment, Disaffect, and thereby lack of willingness and thereby lack of engagement on SD and NIL VFR.
CASE RELATIONAL PATTERNS ANALYSIS
As previous, several V-CL manifest, take on contextually-relevant colouring or characterisation, and contextually re-order in response to the problems framed to him.
Specifically, Lovely House / AAEQRA and Appropriate Design Styling are both very closely linked, or V-CLUSTERED, with the former taking a more terminal character and the latter a more instrumental in favour of the former. Similarly, Benefits of cost-effectiveness; Cost-Control for Project Completion; and Cost-control to avoid overspending / Save money; all are plainly clear, CLUSTERED Instrumental manifestations of the Terminal Value, Saving Money. It stands to reason that all of these cost- and money-related values themes are pointing to one underlying Super-Value, Personal Gain.
So too can the remaining value, Traditional, conservative lifestyle; Traditional house appearance; be seen here as INTERNALLY COMPATIBLE with other Self-Enhancing values, such as Saving Money (i.e. conserving) and aesthetic and emotional appreciation (i.e. Hedonism and Stimulation). Yet, Schwartz argued that Tradition and Conservation are opposed to Openness to Change on his Values Circumplex. However, it is interesting to note that in Schwartz's model, Tradition and Conservation both are equally close to Self-Transcendence than Self-Enhancement. Indeed this would suggest that the equidistances portrayed are in fact not to scale. It can be argued based on the foregoing evidence that Conformity, Conservation, and Tradition may be more about protecting the self and one's self-interests, and less about transcending the self toward benefit for the many, at least as seen with the majority of CL. In fact, Conservative and Traditional values are commonly seen in popular political debate as aligned with Self-Centred Narrow-mindedness and tendency towards Self-Preservation. Diametrically opposed to Universalism and Benevolence.

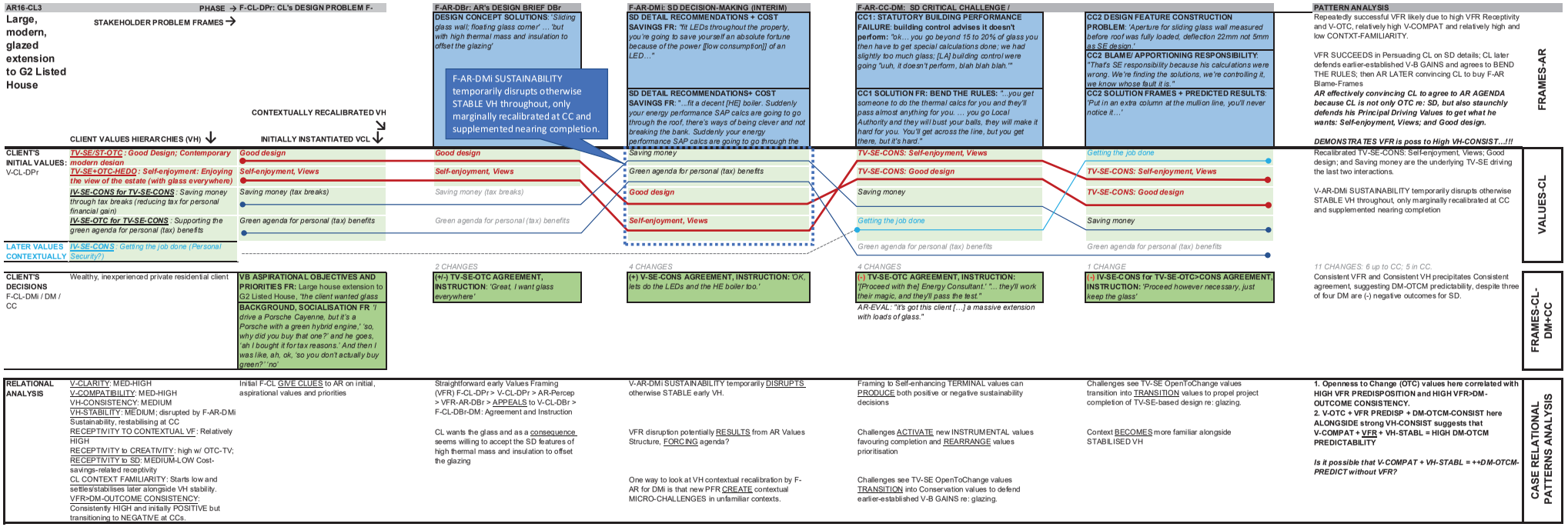

AR15-CL1
PHASE → F-CL-DPr: CL's DESIGN PROBLEM DPr
F-AR-DBr: AR's DESIGN BRIEF DBr
F-AR-DMI: SD DECISION-MAKING (INTERIM)
F-AR-CC-DM: SD CRITICAL CHALLENGE / CONFLICT / CHANGE
PATTERN ANALYSIS
New single-family 'eco-house' on village boundary
STAKEHOLDER PROBLEM FRAMES →
REQUIREMENTS / CHALLENGES FRAMES: *1) Difficult site requires PPS7, incl carbon zero, for planning; everything to do with Code 6; 2) PPS7 requirements for exemplary design more onerous than just Code 6*
SD MEASURES / DESIGN RESPONSES FR: *'Orientation (& site use), sunlight and passive solar gain'*
APPROACH/METHOD / JUSTIFICATION FR: *"There was no need to try and usher them anywhere, they just got it full frontal from the planners: Code 6 'given to us on a plate' by the planners"*
SPECIFIC SD MEASURES / DESIGN RESPONSES FR: *Orientation; …biomass boilers, wood-burning stoves, high insulation levels… triple glazing, …green roofs, PV's, wind turbines…?*
COST/FACT CHALLENGE FR: *Area costs the most money (in response to CL request to enlarge)*
EXISTENTIAL CHALLENGE + ACTION RECOMMENDATION FR: *Major local community objection to wind turbines in planning consultations; recommendation to remove and increase PV.*
PROGRESS FR: *Planning consented; how to proceed; tender and construction?*
CLIENT VALUES HIERARCHIES (VH)
CONTEXTUALLY RECALIBRATED VH
INITIALLY INSTANTIATED VCL
INITIAL VALUES: V-CL-DPr
IV-SE-OTC for TV-SE: Exploring / exploiting possibilities / potential for 'dream
TV-SE (+CONS?): Dream house (AAEQRA)
TV-ST/SE-CONS: Sustainable Lifestyle, not money
IV-ST+SE: Trust in the architect's expetience, Respect the professionals
IV-SE for TV-SE: Knowledge & opportunities for interest and profit
LATER VALUES, CONTEXT-UALLY ACTIVATED: V-CL-DMi, V-CL-CC-DM
IV-SE for TV-SE: Understanding SD technical process: Knowledge
TV-ST/SE: Gaining knowledge through thorough research
TV-SE: DREAM HOUSE; COST DOESN'T MATTER
IV-SE for TV-SE: Serial opportunity for interest & profit
IV-ST/SE: Self-reflection/Self-recognition: Recognising own financial limitations
Exploring potential for dream house
Dream House
Sustainable Lifestyle, not money
Trust, Respect
Knowledge & opportunities: interest, ££
Understanding SD technical process
Gaining knowledge through research
Knowledge & opportunities: interest, ££
Exploring potential for dream house
Dream House
Sustainable Lifestyle, not money
Trust, Respect
Understanding SD technical process
Gaining knowledge through research
Knowledge & opportunities for interest, ££
Dream house, Cost doesn't matter
Sustainable Lifestyle, not money
Exploring potential for dream house
Trust, Respect
Understanding SD technical process
Gaining knowledge through research
Knowledge & opportunities for interest, ££
Dream house, Cost doesn't matter
Exploiting Possibilities for dream house
Sustainable Lifestyle, not money
Trust, Respect
Understanding SD technical process
Gaining knowledge through research
Knowledge & opportunities: interest, ££
Dream house, Cost doesn't matter
Exploiting Possibilities for dream house
Sustainable Lifestyle, not money
Trust, Respect
Understanding SD technical process
Gaining knowledge through research
Knowledge & opportunities: interest, ££
Serial opportunity for profit [and interest]
(Knowledge &) Opportunity for Profit (& Interest)
Self-reflection/self-recognition/ financial limitations
Dream house, Cost doesn't matter
Exploring potential for dream house
Sustainable Lifestyle, not money
Trust, Respect
Understanding SD technical process
Gaining knowledge through research
PATTERN ANALYSIS
Early V-COMPAT helped Consistently SUCCESSFUL VFR appealing to almost entirely ST values, also aided by regulations pertaining to the nature and location of site, making it significantly complex and challenging.
AR consistently BOUNDARY-FRAMING and not afraid to challenge client to 'see how deep their commitment was and how deep their pockets' in relation.
Opportunities made and taken for VFR likely the result of V-COMPAT, V-AR15 and his V-B commitment to SD.
FRAMES-AR
VALUE-CLUSTERING: TV-SE Profit/Gain is an UNDERPINNING VALUES of [[Knowledge and opportunities for interest and profit' and 'Serial Opportunity for interest and profit]]. [[TV-SE Dream House CLUSTERS and manifests as Exploring Potential; Exploiting Possibilities; and DH~EE]].
V-CL relatively stable for novice client, subject to VFR-fuelled Recalibration; Contextual VFR BOUNDARY-FRAMING challenges and introduces/activates new TV and IV.
Early Principal Values in VH Dream house, Cost doesn't matter; Sustainable Lifestyle, not money remained STABLE until CC-Cost>>Opportunity for PROFIT contextually reorganised the Priority of Dream House to see EVERYTHING, including Sustainable Lifestyle drop out of action.
VH UPHEAVAL at COST PLAN caused by Lack of Funding, which forces VCL self-reflection on financial limitations and triggers VH recalibration, with PROFIT as the CORE UNDERPINNING VALUE in the last interaction. Complete REVERSAL of two KEY VALUES: Dream house, Cost doesn't matter; Sustainable Lifestyle, not money. In the end, it was all about money, which ultimately forced CL1 to abandon all Values around SD, Sust-Lifestyle, and Dream House.
VALUES-CL
DECISIONS F-CL-DPr/ DBr/ DMi / DM / CC
High number of V-CL suggests that AR15 was astute at detecting and later observing movement patterns of V-CL.
VALUES-BASED GOALS AND OBJECTIVES: *'Dream house, interested in sustainability, (difficult) site outside village boundary - what can we do? i.e. show me what is possible.'*
PERSONAL BACKGROUND FR: *'Formerly an airline pilot, then an antiques dealer, now owns a solar panel business'*
(+) INITIAL INSTRUCTION: *Demonstrate the possibilities*
3 CHANGES
(+) EARLY CL/ TV-ST DECISION: *'Going for Code 6, submit planning, including wind turbine, PVs, etc. "…it was everything to do with Code 6".'*
(+) BACKGROUND / JUSTIFICATION FR: *'Decision to purchase and proceed on difficult site precipitated CL intrigue in SD and SD process; Researched SD measures, fascinated by the process… "He got into it quite a long way"*
2 CHANGES
(+) AGREEMENT, DECISION FR: *"They went in for … everything—the lot…"*
(+) AGREEMENT, PRINCIPLES FR: *"They bought into the principles of sustainability" …'perhaps wants a show house for his solar panel business'*
(+) JUSTIFICATION FR: *"They assured us it was about a sustainable lifestyle and not about the money"*
(+) INSTRUCTION, GAIN: *'…asked us to investigate potential for enlarging the house'*
5 CHANGES
(-) INSTRUCTION, GAIN FR: *'Increase the size…'*
(+) INSTRUCTION, PROGRESS FR: *'Submit application for planning consent with everything'*
0 CHANGES
(+) INSTRUCTION, COMPROMISE for PROGRESS FR: *'Take out the turbines and increase PVs to save the project in Planning'*
5 CHANGES
(+) INSTRUCTION, PROGRESS FR: *'Clear the site in preparation'*
(-/+) INSTRUCTION, JUSTIFICATION: *"In the end they didn't build it; I think they didn't have enough money"*
(-/+) OUTCOMES: *"They sold it for a large sum of money;… they cleared the site, so it's got consent in perpetuity;… we're just doing the working drawings for another client!"*
5 CHANGES: 5 up to CC; 10 changes in CC.
Decisions are consistently stable, VALUES-BASED, responsive to VFR-AR with consistency, HIGHLY POSITIVE SD OUTCOMES. Ultimately, for a novice client and one-off house, their idealistic values around Sustainable Lifestyle and Dream Home result in an UNAFFORDABLE price tag.
CC at Cost Plan stage triggered reassessment and surreptitious sale to third party, despite consistent reassurances that 'cost doesn't matter', and DRIVING VALUES were Sustainable Lifestyle and Dream Home. Post-planning sale demonstrated those as SURFACE DRIVING VALUES with Serial Opportunity for Interest and Profit becoming the CORE DRIVING VALUE when circumstances changed.
FRAMES-CL-DM+CC
RELATIONAL ANALYSIS
EARLY V-CLARITY: Initially MED-VERY HIGH until the final CC3 PROFIT trumps and supersedes all other VCL.
EARLY V-COMPATIBILITY: HIGH; Wants an ecohouse and personable with interesting personality.
VH-CONSISTENCY: Initially HIGH until CC3 demonstrates INCONSISTENCY.
VH-STABILITY: HIGH throughout until CC3
RECEPTIVITY to CONTEXTUAL VFR: HIGH / unclear: pushing on an open door.
RECEPTIVITY to CREATIVITY: HIGH
RECEPTIVITY to SD: VERY-HIGH
CL CONTEXT FAMILIARITY: Fairly low but increased rapidly due to VCL-driven research into SD process.
VFR>DM-OUTCOME CONSISTENCY: VERY HIGH throughout until CC3.
Copious early indications of VCL and VH provide ample opportunity for VFR.
Early clue on VCL-Opportunities for Profit, although low in the VH, failed to elicit appropriate register in AR15 VFR.
Initial instruction indicates CL RECEP to CREATIVITY.
FAR-VFR immediately setting out the challenges, offering a design response, and justifying the approach provided CL with all KNOWLEDGE-CATEGORIES required for POS DM-OUTCOMES. Poss increase in trust.
Two new VCL activation results from VFR introducing details of challenges+responses+justifications
VFR More specific details about SD measures excites CL, activates new, more closely held or higher-priority VCL-Dream House, Cost No Matter and re-orders VCL-Exploring Potential, which is now sated or satisfied.
Instruction to enlarge can be seen as contrary to VCL-Sustainable Lifestyle, more suggestive of VCL-Good Lifestyle (that might be sustainable).
Possibly suggests AR is so successfully Demonstrating Possibilities, that perhaps the CL wants to push the envelope and investigate possibilities for larger, more spacious house.
VFR approach of explaining challenges in plain fact was meant to put CL1 off of enlarging the house resulting in more materials, larger building footprint, more area to heat and cool… NEG DM-OUTCOME.
lack of more complete strategy used earlier of Challenge-Response-Justification may not have adequately sated CL Need for Understanding/Clarity, which gives CL more room to manoeuver and less knowledge-resistance.
Earlier success encourages CL to capitalise on positive momentum in terms of VCL-Exploring Opportunity which transitions to VCL-Exploiting Possibility. Recalibrated VCL-Exploiting sees all other VCL suppressed or made dormant.
DM countering one core VCL to satisfy another, higher-priority. Better to save the project and lose the turbine than jepoardise the whole project, particularly when the renewables requirement could be met with more PVs.
Timing of CC2 comes after CC1 which recalibrated VH, now permits/facilitates straightforward decision/response to wind turbine objection in favour of removal. POS for the project but NEG for Net Sustainability. IOW VH-CC was set at CC1
No other VH changes as a result of the second challenge;
Earlier VH-Recalib has set the values structure for 3xCC.
Initial instruction based on stabilised VH to begin construction by clearing the site to activate the Planning Consent was premature.
Relatively STABLE VH is completely upended when COST PLAN reveals lack of funding, which precipitates sale of the site, despite "assurances all along that it wasn't about the money", i.e. the project was driven by pro-sustainability values and principles.
This is a Mind-Boggling case in which F-CL signals re: VCL-PROFIT were overshadowed by consistently HIGH-SD-DM as evidenced in HIGH *Relational Analysis Baseline Categories* in [AR15-HHE1A-B21-23].
DM-OUTCOME PREDICTABILITY was HIGH as evidenced across HIGH RA-Baseline Categories until CC-COST activated / recalibrated VCL-PROFIT OPPORTUNITY as V-TRUMP to decimate earlier decisions.
Missed signals potentially because of AR15 values-based over-excitement about eco-house and consequent blindness to potentially devastating VCL combination and historical evidence of VCL-Serial Opportunity for Profit
One possible SIGNAL should be 15 VH CHANGES: relatively low 5 Changes until CC; then 10 changes after CC in which everything was abandoned. This suggests **HIGH VH-CHANGES post-CC signal significant drop in SD.**
CASE RELATIONAL PATTERNS ANALYSIS

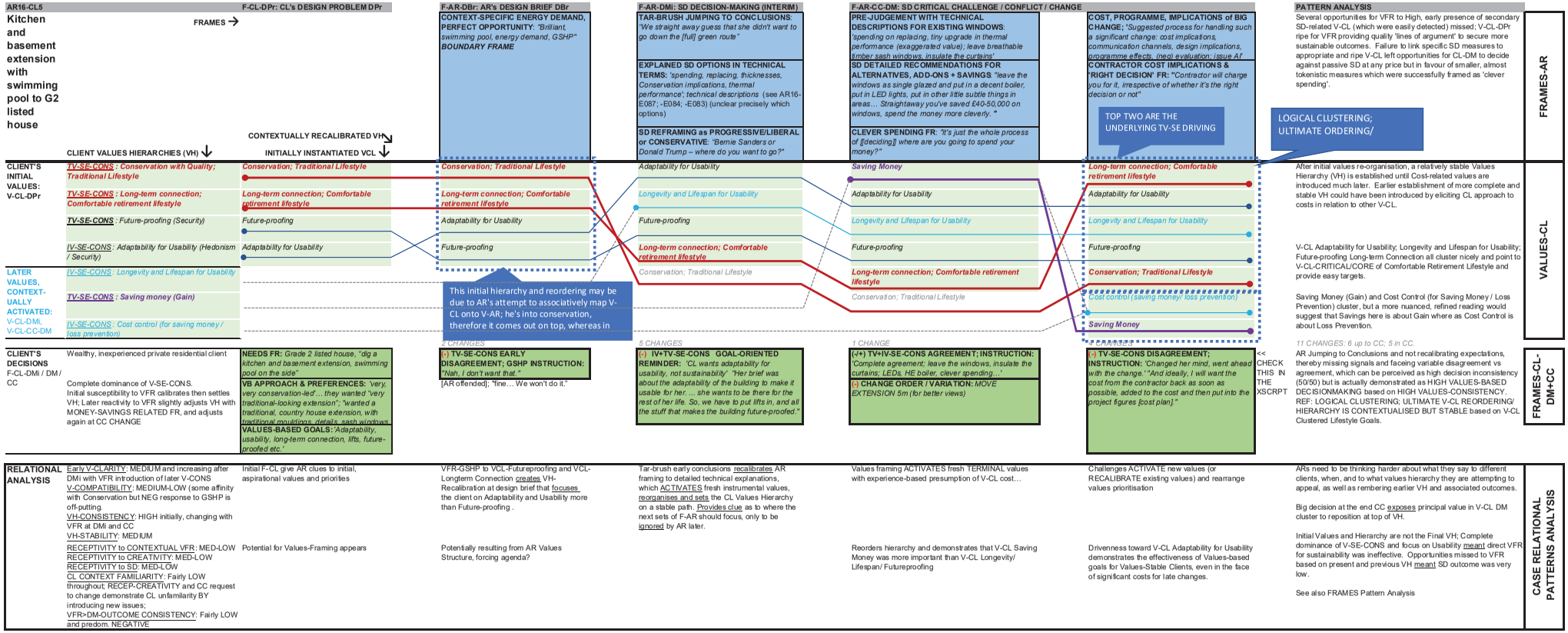

AR15-CL1
PHASE → F-CL-DPr: CL's DESIGN PROBLEM DPr
F-AR-DBr: AR's DESIGN BRIEF DBr
F-AR-DMi: SD DECISION-MAKING (INTERIM)
F-CC-DM: SD CRITICAL CHALLENGE / CONFLICT / CHANGE
PATTERN ANALYSIS
Celebrity CL to demo large cornerplot house and develop flats through agent
STAKEHOLDER PROBLEM FRAMES →
SD APPROACH FRAMES: ESTABLISHING CONTEXTUALLY APPROPRIATE FIRST PRINCIPLES: 'Set up the Scheme Concept right [with Passive Design] re: site use, layout, orientations, solar shading'
DM TACTICS / JUSTIFICATIONS, SD/DESIGN MITIGATING PREVIOUS FAILURE: 'Demonstrate exemplary design to transcend or mitigate three failed applications'
OBVIOUS, CONTEXTUALLY-SPECIFIC PASSIVE DESIGN MOVES: "Absolutely ideal site for orientation; East-West street with a South-facing frontage; Big South-facing lounge windows with big balconies giving solar shading in the summer; it's a no brainer." Achieved 41 flats.
F-AGNT-CC: COST/BENEFIT/RETURN: 'Agent tells CL it's going to cost £500 more (per unit) to build a roof terrace than they'll get back (in return).'
F-AR-CC: APPROACH+JUSTIFICATIONS, SD: Going to planning: "We didn't have to have that [sustainability] conversation with anyone [it was an integral part of the passive design solution]"
AR15 approach, tactics, design moves, and justifications demonstrate a STRATEGIC VFR-APPROACH.
Also shows ability to be contextually aware with F-AR CONTINUALLY REFERRING BACK TO THE CORE LINKED V-CL: IV-SE<>TV-SE
FRAMES-AR
CLIENT VALUES HIERARCHIES (VH)
CONTEXTUALLY RECALIBRATED VH
INITIALLY INSTANTIATED VCL
GOALS, JUSTIFICATION; BR IMPROVEMENT FRAMES: 'Try to get planning by Pledging Code 4 to achieve better than building regs (and to force future developers' hand, hoping they won't resubmit to alter Conditions)'
APPROACH / JUSTIFICATIONS: IMPROVEMENT FRAMES: Promising code level improvements to get through planning (and [surreptitiously] force [future developers] to do something a bit better)
DD APPROACH, SD: Capitalising on obvious contextual features: "It was the most obvious thing in the world; unclear why no-one else managed to achieve that"
SD REQUIREMENTS +JUSTIFICATIONS: "No renewables required for planning at the time, none included [per profit-focused commercial imperative]."
INITIAL VALUES: V-CL-DPr
IV-SE for TV-SE : Maximise Site to Maximise Land Value
IV-SE for TV-SE : Getting Planning Consent (to quickly sell the site) linked to TV-SE PROFIT
TV-SE : Maximum Profit
IV-SE for TV-SE : Minimum involvement for Personal Privacy and Freedom
IV-SE for TV-SE: Minimum Involvement
TV-SE : Getting Planning Consent
TV-SE : Maximise Site to Maximise Land Value
TV-SE : Maximum Profit
IV-SE for TV-SE: Minimum Involvement
TV-SE : Make money on asset however possible (Easy Money)
IV-SE for TV-SE : Getting Planning Consent
IV-SE for TV-SE : Maximise Site to Maximise Land Value
IV-SE for TV-SE : Maximum Profit
IV-SE for TV-SE: Minimum Involvement
TV-SE: Make money on asset (Easy Money)
IV-SE for TV-SE : Getting Planning Consent
IV-SE for TV-SE : Maximise Site to Maximise Land Value
TV-SE : Maximum Profit
IV-SE for TV-SE: Minimum Involvement
IV-SE for TV-SE : Financial Valuation (of sustainability features) for Profit
TV-SE : Maximum Profit
TV-SE: Make money on asset (Easy Money)
IV-SE for TV-SE : Maximise Site to Maximise Land Value
IV-SE for TV-SE : Getting Planning Consent
IV-SE for TV-SE: Minimum Involvement
IV-SE for TV-SE : Financial Valuation (of sustainability features) for Profit
TV-SE : Maximum Profit
TV-SE: Make money on asset (Easy Money)
IV-SE for TV-SE : Maximise Site to Maximise Land Value
IV-SE for TV-SE : Getting Planning Consent
IV-SE for TV-SE: Minimum Involvement
VCL-Maximum PROFIT is the obvious DRIVING VALUE.
V-CLUSTERS of all values around and linked to PROFITm except for the outlier, VCL-Minimum Involvement. This demonstrates that CL19.2 time is worth more than involvement in overseeing a development project in which slightly more foresight and wide-angle lens might deliver higher profit with Added Value.
VALUES-CL
LATER VALUES, CONTEXTUALLY ACTIVATED: V-CL-DMi, V-CL-CC-DM
TV-SE : Make money on asset however possible (Easy Money)
IV-SE for TV-SE : Financial Valuation (of social-sustainable features) for Profit
CL DECISIONS: F-CL-DMi / DM / CC
Inexperienced private residential developer client, represented by experienced agent.
Predominance of VCL Self-enhancing, profit-related
GOALS FOR FINANCIAL GAIN: 'Demolish existing house and Maximise Site with Commercial Developer flats; Maximum Land Value + Maximum Financial Return with Limited Involvement'
INTERACTION PREFERENCE FRAMES: Celebrity CL, communication via third party agent: 'It's just purely a business arrangement, commercial imperative'
2/3 CHANGES
(+) IV-SE for TV-SE GAIN-RELATED RECEPTIVITY: 'Three previous applications for the site had been turned down; Receptive to any ideas that would get a consent'
1 CHANGES
(+) TV-SE INSTRUCTION+PRIOR JUSTIF.: 'Do whatever necessary to achieve a consent'
1 CHANGES
(+) TV-SE INSTRUCTION+PRIOR JUSTIFICATION: Proceed to planning with recommendations
3 CHANGES
(-) TV-SE COST/LOSS INSTRUCTION + JUSTIFICATION: No financial return, no roof terrace: it's going to cost £500 more to build than the return; they won't spend that £500.
0 CHANGES
F-PO-CC: (+) ACTION+RESULT: We sold that [Scheme and Approach] to the planner and it went through ok
7-8 CHANGES: 4-5 up to CC, 3 in CC.
CL-SD-DM-Outcomes consistently POSITIVE, likely due to V-CLARITY, AR-VFR and VFR-Recept.; Negative DM-Outcome likely the result of VFR-BOUNDARY TRIGGER: No Return, Not Interested.
FRAMES-CL DM+CC
RELATIONAL ANALYSIS
EARLY V-CLARITY: HIGH; as evidenced in VH-Consistency.
EARLY V-COMPATIBILITY: VERY LOW
VH-CONSISTENCY: HIGH
VH-STABILITY: HIGH
RECEPTIVITY to CONTEXTUAL VFR: HIGH
RECEPTIVITY to CREATIVITY: HIGH
RECEPTIVITY to SD: HIGH; all receptivity likely related to the previous three failed
CL CONTEXT FAMILIARITY: Fairly low throughout; AR's CC1 demonstrates CL disinterest in providing important amenity for little cost to Add Value;
VFR>DM-OUTCOME CONSISTENCY: Relatively HIGH throughout, even at CC, which simply cements Profit-driven VCL.
High early V-Clarity provides AR15 with clear picture of the CL context and Goals: Financial Gain; thereby providing significant VFR material for his "lines of argument."
FAR-SD used to 'force the developers hand and propose higher Code 4 SD' demonstrates AR15 ability to VFR and TRANSCEND LOW V-COMPATIBILITY based on his own VAR..!!!
CL19.2 receptive to VFR, Creativity, and SD likely because of three failed applications, demonstrated in F-CL-DBr above.
Intentional VFR outlining SD Approach, Principles, Justifications and specifically pointing to 'FAR: Improvements on BR' is successful; which creates contextual VH-Recalibration.
Failed applications likely contribute to AR DM-TACTICS, and Justifications including FR-Improvements, which appear to resonate successfully with DU192; DM-Outcome POSITIVE.
Serial VFR with and DM-Tactics also appear to Contextually Activate VCL Make Money However Possible as top priority, sees VH-Recalibration and VH-Stabilisation.
Ditto; AR Design and Communication skill evidenced in FAR-Detail Design Moves as "no brainer".
VH-RECALIBRATION here due to CL being pressed on Roof Terraces; F-AGNT lays out F-CC-COST/BENEFIT/RETURN terms very precisely: No Financial Return, No CL Interest. F-AGNT likely due to V-AGNT and prior experience thinking they know what this client wants and their V-Drivers.
CC1 demonstrates CL disinterest in providing important amenity for little cost to Add Value, thereby ignoring opportunity for increased profit; sees little cost-Contextual Values Re-Activation of Minimum Involvement likely due to the challenge to his Values, which reorders VH to final setting.
Again VH-Stable at CC; Integrated SD-Measures as PASSIVE DESIGN, and No renewables required.
V-Clarity and VH-Consistency provided AR15 with serial opportunities to VFR despite V-INCOMPATIBILITY. Add VFR-Receptivity and together these likely resulted in HIGH-DM-OUTCOME PREDICTABILITY.
PRIME EXAMPLE of AR ability to VFR and TRANSCEND LOW V-COMPATIBILITY based on own VAR.
CASE RELATIONAL PATTERNS ANALYSIS


AR15-CL3
2x New houses at rear of large garden to existing house
PHASE → F-CL-DPr: CL's DESIGN PROBLEM DPr
STAKEHOLDER PROBLEM FRAMES →
CONTEXTUALLY RECALIBRATED VH
CLIENT VALUES HIERARCHIES (VH) ↓
INITIALLY INSTANTIATED VCL ↓
F-AR-DBr: AR's DESIGN BRIEF DBr
F-AR-DMI: SD DECISION-MAKING (INTERIM)
F-AR-CC-DM: SD CRITICAL CHALLENGE / CONFLICT / CHANGE
PATTERN ANALYSIS
FRAMES-AR
VALUES-CL
FRAMES-CL-DM+CC
CASE RELATIONAL PATTERNS ANALYSIS
INITIAL VALUES: V-CL-DPr
LATER VALUES, CONTEXT-UALLY ACTIVATED: V-CL-DMI, V-CL-CC-DM
DECISIONS F-CL-DMI / DM / CC
SOME VH INCONSISTENCY resulting from FRAMING SUSCEPTIBILITY
Inexperienced private residential client. Experienced design-led and sustainability-focused managing architect.
CHALLENGE FRAMES; SOLUTION-TACTIC FRAMES: 'Outside developable area, challenging in planning; Seek exemplary design justification to satisfy NPPF Para 55 in countryside'
BENEFIT FRAMES of PRACTICAL SOLUTIONS: 'SD payback periods: Long-term commitment provided 'lines of argument'
BENEFIT FRAMES of TANGIBLE SOLUTIONS re long-term payback; 'Thicker insulation for lower fuel bills; PVs on 12-yr paybacks'
DESIGN SOLUTION APPROACH FRAMES, IMPLIED BENEFIT: [We suggest] 'Cleaning it all up and stripping off all the unnecessary stuff'
DESIGN SOLUTION APPROACH FRAMES, #IMPLIED BENEFIT: 'Concept and planning designed as a bespoke, contemporary interpretation of a (minimalised) traditional building'
PLANNING JUSTIFICATION, REVISED: "The Council is woefully behind on 5-year housing land supply; So, we just went for that justification. We didn't need the Para 55 justification in the end."
SD MEASURES + JUSTIFICATION: 'Fluke bus stop nearby will satisfy sustainable location requirements'
F-CON-CC: COST + CHANGE FRAMES: We can get it done cheaper somewhere else'
F-CON-CC: COST + QUALITY-REDUCTION FRAMES: Make it more conventional, save money
'They just did the traditional 'thing'' 'dumbed it down', lost some important features. 'They went ahead built something different: the basic volume is obviously the same because of planning, windows in about the right places, but [poor/inappropriate/conventional] detailing'
V-CLUSTER1
V-CLUSTER2
V-CLUSTER3
TV-ST/SE: Maintaining existing FRIENDSHIPS in the village
TV-SE (/ST2): Long-term commitment (security, dependability)
TV-SE: Nice Home; 'Connect' thoroughly with it
IV-SE for TV-SE: Practical benefits, including Future-proofing [Security, Dependability]
TV-SE: Maintaining INDEPENDENCE
IV-SE: TANGIBLE BENEFITS (as ex-builder [Q3]); "he wasn't interested in any blue-sky thinking… very pragmatic."
IV-SE: BEING PRAGMATIC: Anything pragmatic with PRACTICAL BENEFITS
IV-SE for TV-SE: Cost Savings / Value-for-Money
MAINTAINING FRIENDSHIPS
LONG-TERM COMMITMENT
NICE HOME WITH CONNECTION
PRACTICAL BENEFITS, Future-Proofing, Low Running Costs
Maintaining INDEPENDENCE
TANGIBLE BENEFITS
PRACTICAL BENEFITS, Future-Proofing, Low Running Costs
PRAGMATIC; PRACTICAL BENEFITS
Cost Savings / Value-for-Money
TANGIBLE BENEFITS (as ex-builder, sees little value in AR architectural detailing)
PRAGMATIC; PRACTICAL BENEFITS
Maintaining INDEPENDENCE (i.e. becomes more difficult with less money)
LONG-TERM COMMITMENT
NICE HOME WITH CONNECTION
MAINTAINING FRIENDSHIPS
Maintaining INDEPENDENCE (i.e. harder with less money)
LONG-TERM COMMITMENT
NICE HOME WITH CONNECTION
MAINTAINING FRIENDSHIPS
GOALS + OBJECTIVES FOR GAIN, PERSONAL/FAMILY: 'Nice home for retirement with nice views; remaining local; maintaining connections, both physical and social'
GOALS + OBJECTIVES FOR GAIN, PERSONAL/FAMILY: 'Interested in Future-Proofing, Low Running Costs'
4 CHANGES
(+) IV-SE & TV-SE AGREEMENT + INSTRUCTION: 'Proceed towards 'exemplary design'; Thick insulation and PVs
2 CHANGES
(+) IV-SE & TV-SE AGREEMENT + INSTRUCTION: 'Agreed to go to planning with PSS Justification and modern take [interpretation] on a traditional building; Stripping off unnecessary detail.'
0 CHANGES
(+) IV-SE & TV-SE AGREEMENT: 'Agreed to submit planning with housing supply justification in sustainable location'
5 CHANGES
(-) IV-SE COST REDUCTION INSTRUCTION: 'Builder-friend can get detail/construction design elsewhere'
2 CHANGES
(-) IV-SE COST REDUCTION INSTRUCTION: 'Lose some details and SD features, reduce PVs and reduce insulation to minimums.'
AR-EVAL: the 'usual/normal' cringeworthy execution when AR not involved thro' construction; Would take a different approach if I were designing it for someone else to take forward.
13 CHANGES: 6 up to CC; 7 in CC.
RELATIONAL ANALYSIS
EARLY V-CLARITY: HIGH
EARLY V-COMPATIBILITY: MED-HIGH initially, leading to LOW later when CL cheapens design, removes AR from site.
VH-CONSISTENCY: MED-HIGH
VH-STABILITY: MED-HIGH
RECEPTIVITY to CONTEXTUAL VFR: HIGH
RECEPTIVITY to CREATIVITY: HIGH until VFR-Cost
CL CONTEXT FAMILIARITY: LOW
VFR>DM-OUTCOME CONSISTENCY: VERY HIGH throughout.
Very clear initial DPr and IV-SE Values-Based Goals and Objectives for personal/family Gain. Helps establish early V-CLARITY and engenders V-COMPAT.
Intentional VFR, intentional POS-SD OUTCOME
AR-VFR-STRATEGY of Design Concept/ Solution+Consent Strategy+Benefits instigates.
Contextual VH-RECALIBRATION with appeals to TV-SE: LONG-TERM COMMITMENT and NICE HOME WITH CONNECTION THROUGH IV-SE: TANGIBLE & PRACTICAL BENEFITS; POS EFFECT.
Intentional VFR, intentional POS-SD OUTCOME.
AR-VFR-STRATEGY of Planning Challenge+Solution+Benefits instigates minor Contextual VH-RECALIBRATION with appeals to TV-SE: LONG-TERM COMMITMENT and NICE HOME WITH CONNECTION THROUGH IV-SE: PRAGMATIC, PRACTICAL & TANGIBLE BENEFITS of VFR: 'Cleaning it all up and stripping off all the unnecessary stuff'; which PRIMES LATER VCL IV-SE:COST
Intentional VFR, intentional POS-SD OUTCOME.
AR-VFR-STRATEGY of SD-Measures + Planning Justification stabilises VH-CL with appeals to TV-SE: LONG-TERM COMMITMENT and NICE HOME WITH CONNECTION THROUGH IV-SE: PRAGMATIC, PRACTICAL & TANGIBLE BENEFITS of VFR: 'woefully behind; Fluke bus stop satisfying sustainable location', which REACTIVATES TV-ST/SE: Maintaining existing FRIENDSHIPS.
Likely that the emphasis on 'woefully behind' and 'fluke' may also PRIME VCL-Cost with flippant language, suggesting SD can be treated with levity, lack of seriousness.
Intentional VFR, intentional CON-FAVOURABLE OUTCOME; potentially unintentional NEG-SD OUTCOME
Final VH-Recalibration DOES confuse AR15, likely because Early HIGH V-CLARITY and V-COMPATIBILITY transitioned to later LOW V-COMPAT because VFR-CON: Cost instigated CL3 to cheapen design, remove AR from site; NEG-SD EFFECTS.
Intentional VFR, intentional CON-FAVOURABLE OUTCOME; intentional NEG-SD OUTCOME in favour of COST-SAVINGS.
AR15's VFR Strategies were very effective in speaking to terminal values THROUGH instrumental values: Challenge-Solution-Benefits; then Concept/Solution-Consent Strategy-Benefits
CON taps in to Dormant IV-SE: COST/SPENDING that all clients apepar to have, but the extent to which CLs capitulate may be due to the strength of their TV-ST when challenged by contexts & conditions that activate or appeal to IV-SE and TV-SE.
Almost complete dominance of TV-SE then IV-SE Self-enhancement values; One TV-ST: Maintaining Friendships is also TV-SE.
V-CLUSTER1 of IV-SE: TANGIBLE BENEFITS with IV-SE: BEING PRAGMATIC: Anything pragmatic with PRACTICAL BENEFITS. [POSS also with Cost Savings / Value-for-Money]
V-CLUSTER2 of TV-SE: Long-term COMMITMENT (security, dependability) with TV-SE: NICE HOME with CONNECTION
V-CLUSTER3 of TV-SE: Maintaining INDEPENDENCE with TV-SE: Long-term COMMITMENT (security, dependability) with TV-SE: NICE HOME with CONNECTION with TV-ST/SE: Maintaining FRIENDSHIPS
Follows the now-distinct pattern that VCL-Instrumental and Self-Enhancing values become high-priority in the VH after Contextual VH-Recalibration / Reorganisation.
AR15's attention/sensitivity to VCL and VH-Recalibration helps him identify appropriate VFR: VFR-Benefits appeal to Benefits- and Gain-related VCL, alongside a tertiary appeal and maintenance of VCL-Commitment and Connection, likely resulting in serial Agreement + Instruction.
Later CON-VFR: Cost-Savings activates dormant VCL for F-CL-DM which are POS/favourable to CON but NEG/unfavourable to SD.
AR15's attention/sensitivity to VCL and VH-Recalibration helps him identify appropriate VFR : Successful VFR until cost enters at construction stage.
VFR-Benefits appeal to Benefits- and Gain-related VCL, alongside a tertiary appeal and maintenance of VCL-Commitment and Connection, likely resulting in serial Agreement + Instruction.
Later CON-VFR: Cost-Savings activates dormant VCL for F-CL-DM which are POS/favourable to CON but NEG/unfavourable to SD.
Classic example of initial Terminal Values being successfully activated and reinforced with contextual VFR-AR, then being reordered and de-prioritised by later Instrumental Values activated by VFR-CON appealing to MONEY.


AR16-CL1
New Vicarage for regional Diocese
PHASE → F-CL-DPr: CL's DESIGN PROBLEM DPr
STAKEHOLDER PROBLEM FRAMES →
CONTEXTUALLY RECALIBRATED VH ↘
CLIENT VALUES HIERARCHIES (VH) ↓
INITIALLY INSTANTIATED VCL ↓
F-AR-CC-DM: SD CRITICAL CHALLENGE / CONFLICT / CHANGE
BRIEF RESPONSE ACTIONS with EVALUATION, thinly-veiled CRITICISM: 'Designed them a conventional, pitched roof Barratt-style vicarage'
CHANGE TO SD APPROACH, IMPLICATIONS FR: 'Conventional design, low fee! Full green scheme, more time, different beast, higher fee…!'
SPECIFIC DETAILED SD MEASURES: 'Orientation, minimal windows, thermal mass...'
AR EVALUATION FR: 'Game change [towards green design]'
PATTERN ANALYSIS
FRAME S-AR
CLIENT'S INITIAL VALUES: V-CL-DPr
TV-ST-CONS : Benevolence, Caring for Staff (based on Tradition, Conformity) (CO)
TV-ST-CONS : Tradition (CO)
IV-SE-CONS : Cost-effectiveness (CO)
LATER VALUES, CONTEXT-UALLY ACTIVATED: V-CL-DMi, V-CL-CC-DM
IV-ST/SE : Higher standards, decent building (Dependability, Achievement-Growth)
IV-SE for TV-SE-CONS :Thermal efficiency
IV-ST-UNIV for TV-SE-OTC/CONS : Procuring a sustainable marker for their future; Sustainable image + identity (Universalism + Reputation)
TV-ST for TV-ST+SE: Green Agenda for Sustainability Identity
Benevolence, Caring for Staff
Tradition
Cost-Effectiveness
Higher standards, decent building
Thermal efficiency
Future Marker; Sustainable Image, Identity
Cost-Effectiveness
Benevolence, Caring for Staff
Tradition
Higher standards, decent building
Thermal efficiency
Future Marker; Sustainable Image, Identity
Green Agenda for Sustainability Identity
Benevolence, Caring for Staff
Cost-Effectiveness
Tradition
Higher standards, decent building
Thermal efficiency
Future Marker; Sustainable Image, Identity
Green Agenda for Sustainability Identity
Benevolence, Caring for Staff
Cost-Effectiveness
Tradition
Primary UNDERPINNING VALUES can be said as Benevolence, Caring for Staff; and Green Agenda for Sustainability Identity
Instrumental values become top priority during CC.
Early V-CLUSTER likely for Benevolence, Caring for Staff, Tradition, Conformity; possibly overruled by emergent V-CLUSTER likely for Future Marker; Sustainable Image, Identity; and Green Agenda for Sustainability Identity
Cost-effectiveness likely still there in the background, just not evident in these Interactions
Higher Standards and SD-RELATED VALUES likely adopted BECAUSE of V-Terminal Self-Transcending despite V-Tradition-Conformity-Conservation owing to CL1 Typology as Religious Institution; suggests that Future-View + Identity/Reputation + Benevolence facilitated V-OTC and ultimately SD
6 CHANGES: 0 up to CC; 6 in CC.
VALUES-CL
CLIENT'S DECISIONS F-CL-DMi / DM / CC
Predominance of V-ST and CONSERVATION;
Semi-experienced regional institutional client
AGENT FR: "Originally received an instruction for a really conventional Barratt-style vicarage"
CL NEEDS-BASED INSTRUCTION: 'we need a new vicarage'; traditional church grounds
4 CHANGES
(+) CL changing mind after seeing initial design; CHANGE ORDER: "they suddenly realized, 'no, no…' game change. 'Chuck that out the window, start again'. Better fee, decent building."
(+) SD INSTRUCTION: 'we need a design for a thermally efficient vicarage'
(+) JUSTIFICATION, IDENTITY: 'It's a marker for our future; we want a sustainable identity'
2 CHANGES
(+) RECALIBRATION OF SD WANTS: 'we want passive house. Passive house standards. … we want a green, PassivHaus vicarage.'
(+) AGREEMENT, INSTRUCTION: "they bought into it, and I spent more time on it. So, I got the building right."
0 CHANGES
(+) AGREEMENT, INSTRUCTION: "they were buying into the green agenda, they bought it [all]"
Later, Serially Positive decisions likely caused or influenced by later V-CLARITY, V-COMPATIBILITY INCREASE, Better VFR, more enthusiasm.
FRAMES-CL-DM+CC
RELATIONAL ANALYSIS
EARLY V-CLARITY: Very LOW, via 3rdParty therefore PRESUMED.
EARLY V-COMPATIBILITY: Very LOW, transitioning to later relatively high V-COMPAT
VH-CONSISTENCY: MEDIUM
VH-STABILITY: MEDIUM
RECEPTIVITY to CONTEXTUAL VFR: HIGH
RECEPTIVITY to CREATIVITY: HIGH
RECEPTIVITY to SD: initially LOW, later transitioning to HIGH SD RECEPTIVITY.
CL CONTEXT FAMILIARITY: Unclear, likely to be MEDIUM owing to CL nature as a Diocese with building stock. CL change of tack and use of SD-related PF, demonstrates later relatively HIGH CF.
VFR>DM-OUTCOME CONSISTENCY: Initially LOW but CC triggered CHANGE, later becoming Consistently HIGH and POSITIVE.
Values-limited initial 3rd party instruction precipitated assumption of Core CL V+VH.
V-Assumptions led to discouragement, disinterest; perceived early V-INCOMPATIBILITY; likely led to AR-EVAL thinly-veiled criticism.
Unlikely that AGENT framed instruction as Barratt-Style; likely due to AR's embellishment, evidencing the above.
Example of poor VALUES-COMMUNICATION via 3rd Party meant AR16 got the initial building design wrong and CL returned/changed mind with INSTRUCTION to Correct / Change.
F-AR disparaging and likely to have APPEALED NEGATIVELY CL, precipitating SUCCESSFUL V-ACTIVATION and improved V-ARTICULATION then V-COMMUNICATION.
F-AR disparaging EVAL PLUS RESULTS likely CHALLENGED CL1 and effected New VH with new priorities and new instructions.
Additional AR+CL engagement with SD APPROACH, IMPLICATIONS FR brings out another V-CORE of Green Agenda for Sustainability Identity
VH-CL stabilises with AR clarifying revised SD Design Approach through VFR
AR Renewed ENTHUSIASM likely the result of V-COMPATIBILITY INCREASE
Detail FR responding to previous VH recalibration and new VH supplementation appears to STABILISE VH and provide AR with sufficient confidence to proceed and provide his own positive evaluation.
Initial interpersonal challenges with Values Miscommunication through AGENT results in bad design the CL dislikes, which is also conventional and not particularly sustainable. This initial result Challenges the client, who better communicates VH through the now-alerted agent. This ultimately facilitates Later HIGH VFR>DM-OUTCOME CONSISTENCY for a passively sustainable building.
CASE RELATIONAL PATTERNS ANALYSIS


AR16-CL2
PHASE → F-CL-DPr: CL's DESIGN PROBLEM DPr
Complete refurbish 4/5-storey, seafront, G2 listed, Victorian EOT
STAKEHOLDER PROBLEM FRAMES →
CLIENT VALUES HIERARCHIES (VH)
CONTEXTUALLY RECALIBRATED VH
INITIALLY INSTANTIATED VCL
F-AR-DBr: AR's DESIGN BRIEF
PASSIVE SD APPROACH FR: 'bolt [sustainability] in at the beginning; everything envelope, then technologies and systems: boilers and renewables...'
F-AR-DMI: SD DECISION-MAKING (INTERIM)
GOOD PRACTICE / PASSIVE SD DETAILS FR: 'passive design: highly insulated envelope & windows; HE boilers, then everything else, renewables, etc.'
BOUNDARY FR as PROPER GREEN: 'do you want a single heating system [boiler], or do you want a multiple heating system [boiler + solar thermals]?'.
TWO SYSTEMS, ADDITIONAL COST, CHALLENGE FR: 'If you're buying up to that additional cost of "two systems"; "Additional cost of renewables as "bolt-on's, add-on's"; function depending on climate (i.e. not always working)'
F-AR-CC-DM SD CRITICAL CHALLENGE / CONFLICT / CHANGE
CC1: EXPERIMENTATION vs RELIABILITY re SYSTEM DETAILING: "...do you want to be a petri dish, do you want to be an experiment, or do you want to deliver? [...] If you want to trailblaze or come up with something completely new, it may work, it may be an f-ing disaster. Do you want to take that risk, or do you want to use products that actually you know are working?"
CC1: BUY-INTO TECHNOLOGY + OPERATION: "it's a question of buying into a technology and into a way of operating and using the building."
CC2: SPECIFIC DETAILED SD MEASURES: '... we'd suggest you go for biomass boilers, whole-house heat recovery, slimline double-glazing, improved thermal insulation and airtightness, improved acoustic performance; ... low-energy lighting and appliances, and a heating management system...'
PATTERN ANALYSIS
VH-CLARITY, CONSISTENCY, STABILITY provides AR16 with ample opportunity to VFR, which he does successfully and consistently. VH-STABILITY provides AR16 with confidence to Challenge CL2 with Boundary-seeking F-DMi and F-CC to see just how far CL2 is willing to follow words with money.
FRAMES-AR
CLIENT'S INITIAL VALUES: V-CL-DPr
TV-ST/SE-CONS : Fully committed to Conservation, Restoration
TV-ST/SE-CONS : Family; Peace / Privacy
IV-SE-CONS: Convenience
TV-ST-UNIV/BENEV+SE-OTC: Green Building; money no object
LATER VALUES, CONTEXTUALLY ACTIVATED: IV-SE-CONS: Reliability (for convenience)
Conservation, Restoration: MNO
Family; Peace / Privacy
Convenience
Green Building
Green Building
Conservation, Restoration: MNO
Family; Peace / Privacy
Convenience
Green Building, MNO
Conservation, Restoration: MNO
Family; Peace / Privacy
Convenience
Reliability (for convenience)
Green Building, MNO
Conservation, Restoration: MNO
Family; Peace / Privacy
Convenience
Reliability (for convenience)
Green Building, MNO
Conservation, Restoration: MNO
Family; Peace / Privacy
Convenience
The presence of OTC values can be seen as PRECEDING and potentially PREDICTING RECEPTIVITY to F-AR that Challenge CONSERVATION values...
Demonstrates how CL can support two opposing V-Categories on Schwartz's V-CIRCUMPLEX. OTC demonstrated by willingness to consistently embrace and decide in favour of AR16 SD measures & posed challenges.
VALUES-CL
CLIENT'S DECISIONS F-CL-DMi / DM / CC
Very High proportion of V-CONSERVATION, but one important V-OTC
Semi-experienced wealthy, celebrity residential client
V-F FACT-BASED GOALS: 'Complete house refurbishment on 4-storey, seafront, Grade 2 listed, Victorian EOT, £3m budget'
VALUES-BASED IDEALS, GOALS AND OBJECTIVES: 'Quiet, secure, seaside family home'; 'Reinstate the grand, period details; spare no expense'
VALUES-BASED IDEALS: '...we like the green ticket'
1 CHANGE
(+) TV-ST/SE-OTC AGREEMENT, INSTRUCTION: 'OK, proceed on that basis...'
0 CHANGES
(+) TV-ST/SE-OTC AGREEMENT, INSTRUCTION: '[Go with the] biomass, heat recovery, PVs, double-glazing, you name it... we did everything, and it worked [incl. HE boilers, and solar thermals]"
1 CHANGE
(+/-) TV-ST/SE-CONS AGREEMENT, INSTRUCTION: 'We want to use products that you know are working'
0 CHANGES
(+) TV-ST/SE-OTC+CONS AGREEMENT, INSTRUCTION: 'They bought in ... all of it. [just make sure it works]'
2 CHANGES: 1 up to CC; 1 in CC.
Consistently positive outcomes can be tied to V-COMPAT > AR-VFR combined with V-CL-OTC and associated RECEPTIVITY. However, taken together with Conservation-related project outcomes, this suggests that RECEPTIVITY depends first on V-CL and V-CLARITY, then VFR and also V-COMPAT, as well as budget.
Nested in this dependency is the location of SD-BOUNDARIES by Boundary-seeking VFR/REFRAMING.
FRAMES-CL-DM+CC
RELATIONAL ANALYSIS
EARLY V-CLARITY: MED-HIGH
EARLY V-COMPATIBILITY: HIGH
VH-CONSISTENCY: HIGH
VH-STABILITY: HIGH
RECEPTIVITY to CONTEXTUAL VFR: HIGH
RECEPTIVITY to CREATIVITY: HIGH
CL CONTEXT FAMILIARITY: Fairly low throughout; AR's CC1 demonstrates CL unfamilarity and introduces new issues;
VFR>DM-OUTCOME CONSISTENCY: VERY HIGH throughout and POSITIVE.
CL2 lays almost everything out on the table from the start; well-articulated VH adds to EARLY V-CLARITY and promotes accessibility for AR16 V-COMPAT evaluation.
VH Recalibration when AR VFR SD Approach appeals to both V-CL Green Building and Conservation/Restoration
An agreed SD approach recalibrates and ultimately stabilises VH-CL.
Conversations on conservation/restoration likely to evoke a very similar VH; activating all values in the hierarchy
Two Systems Add Cost FR apparently CREATES NO NOTICABLE EFFECT on VH-CL STABILITY or DM OUTCOME CONSISTENCY; CL can stomach the additional cost.
These FR begin VALUES-PRIMING for V-CL Reliability to emerge in the next interaction.
VH Recalibration when AR VFR ACTIVATES dormant V-CL Reliability alongside RE-ACTIVATION of Family and Convenience, which are logically interacting.
VH restabilises; F-CL evidences revised VH
Boundary-seeking VFR continue to build on established VH-CL + new, compatible IV-Reliability
Conservation related FR conversations would conceivably and likely involve the same VH but with a contextualised VH
Ordering based on VFR and DM-content requirements.
VH-STABILITY and VH-CONSISTENCY provide CLARITY and facilitate rapid, early V-COMPATIBILITY to provide AR16 with fertile ground to consistently VFR. AR16 gets an early feeling for CL2-DM at DBr based on strong values and commensurately high budget, which are clearly linked here.
Consistently positive outcomes and consistent VFR > V-ACTIV > (+)VB-DM patterns demonstrate HIGH VFR>DM-OUTCOME CONSISTENCY. AR challenges to VH-CL further support this view.
This case demonstrates that CONTEXT FAMILARITY is not linked or correlated with HIGH VFR>DM-OUTCOME CONSISTENCY.
CASE RELATIONAL PATTERNS ANALYSIS


AR16-CL3
Large, modern, glazed extension to G2 Listed House
PHASE → F-CL-DPr: CL's DESIGN PROBLEM F-
STAKEHOLDER PROBLEM FRAMES →
CONTEXTUALLY RECALIBRATED VH
CLIENT VALUES HIERARCHIES (VH) ↓
INITIALLY INSTANTIATED VCL ↓
F-AR-DBr: AR's DESIGN BRIEF DBr
DESIGN CONCEPT SOLUTIONS: 'Sliding glass wall; floating glass corner' … 'but with high thermal mass and insulation to offset the glazing'
F-AR-DMi SUSTAINABILITY temporarily disrupts otherwise STABLE VH throughout, only marginally recalibrated at CC and supplemented nearing completion.
F-AR-DMi: SD DECISION-MAKING (INTERIM)
SD DETAIL RECOMMENDATIONS + COST SAVINGS FR: "fit LEDs throughout the property, you're going to save yourself an absolute fortune because of the power [[low consumption]] of an LED…"
SD DETAIL RECOMMENDATIONS+ COST SAVINGS FR: "…fit a decent [HE] boiler. Suddenly your energy performance SAP calcs are going to go through the roof, there's ways of being clever and not breaking the bank. Suddenly your energy performance SAP calcs are going to go through the
F-AR-CC-DM: SD CRITICAL CHALLENGE /
CC1: STATUTORY BUILDING PERFORMANCE FAILURE: building control advises it doesn't perform: "ok… you go beyond 15 to 20% of glass you then have to get special calculations done; we had slightly too much glass; [LA] building control were going "uuh, it doesn't perform, blah blah blah.'"
CC1 SOLUTION FR: BEND THE RULES: "…you get someone to do the thermal calcs for you and they'll pass almost anything for you. … you go Local Authority and they will bust your balls, they will make it hard for you. You'll get across the line, but you get there, but it's hard."
CC2 DESIGN FEATURE CONSTRUCTION PROBLEM: 'Aperture for sliding glass wall measured before roof was fully loaded, deflection 22mm not 5mm as SE design.'
CC2 BLAME/ APPORTIONING RESPONSIBILITY: "That's SE responsibility because his calculations were wrong. We're finding the solutions, we're controlling it, we know whose fault it is."
CC2 SOLUTION FRAMES + PREDICTED RESULTS: 'Put in an extra column at the mullion line, you'll never notice it…'
PATTERN ANALYSIS
Repeatedly successful VFR likely due to high VFR Receptivity and V-OTC, relatively high V-COMPAT and relatively high and low CONTXT-FAMILIARITY.
VFR SUCCEEDS in Persuading CL on SD details; CL later defends earlier-established V-B GAINS and agrees to BEND THE RULES; then AR LATER convincing CL to buy F-AR Blame-Frames
AR effectively convincing CL to agree to AR AGENDA because CL is not only OTC re: SD, but also staunchly defends his Principal Driving Values to get what he wants: Self-enjoyment, Views; and Good design.
DEMONSTRATES VFR is poss to High VH-CONSIST…!!!
FRAMES-AR
CLIENT'S INITIAL VALUES: V-CL-DPr
TV-SE/ST-OTC : Good Design; Contemporary modern design
TV-SE+OTC-HEDO : Self-enjoyment: Enjoying the view of the estate (with glass everywhere)
IV-SE-CONS for TV-SE-CONS : Saving money through tax breaks (reducing tax for personal financial gain)
IV-SE-OTC for TV-SE-CONS : Supporting the green agenda for personal (tax) benefits
LATER VALUES CONTEXTUALLY IV-SE-CONS : Getting the job done (Personal Security?)
Good design
Self-enjoyment, Views
Saving money (tax breaks)
Green agenda for personal (tax) benefits
Good design
Self-enjoyment, Views
Saving money (tax breaks)
Green agenda for personal (tax) benefits
Saving money
Green agenda for personal (tax) benefits
Good design
Self-enjoyment, Views
TV-SE-CONS: Self-enjoyment, Views
TV-SE-CONS: Good design
Saving money
Getting the job done
Green agenda for personal (tax) benefits
Getting the job done
TV-SE-CONS: Self-enjoyment, Views
TV-SE-CONS: Good design
Saving money
Green agenda for personal (tax) benefits
Recalibrated TV-SE-CONS: Self-enjoyment, Views; Good design; and Saving money are the underlying TV-SE driving the last two interactions.
V-AR-DMi SUSTAINABILITY temporarily disrupts otherwise STABLE VH throughout, only marginally recalibrated at CC and supplemented nearing completion
VALUES-CL
2 CHANGES
4 CHANGES
4 CHANGES
1 CHANGE
11 CHANGES: 6 up to CC; 5 in CC.
CLIENT'S DECISIONS F-CL-DMi / DM / CC
Wealthy, inexperienced private residential client
VB ASPIRATIONAL OBJECTIVES AND PRIORITIES FR: Large house extension to G2 Listed House, 'the client wanted glass
BACKGROUND, SOCIALISATION FR 'I drive a Porsche Cayenne, but it's a Porsche with a green hybrid engine,' 'so, why did you buy that one?' and he goes, 'ah I bought it for tax reasons.' And then I was like, ah, ok, 'so you don't actually buy green?' 'no'
(+/-) TV-SE-OTC AGREEMENT, INSTRUCTION: 'Great, I want glass everywhere'
(+) V-SE-CONS AGREEMENT, INSTRUCTION: 'OK, lets do the LEDs and the HE boiler too.'
(-) TV-SE-OTC AGREEMENT, INSTRUCTION: '[Proceed with the] Energy Consultant.' "… they'll work their magic, and they'll pass the test."
AR-EVAL: "it's got this client […] a massive extension with loads of glass."
(-) IV-SE-CONS for TV-SE-OTC>CONS AGREEMENT, INSTRUCTION: 'Proceed however necessary, just keep the glass'
Consistent VFR and Consistent VH precipitates Consistent agreement, suggesting DM-OTCM predictability, despite three of four DM are (-) negative outcomes for SD.
FRAMES-CL-DM+CC
RELATIONAL ANALYSIS
V-CLARITY: MED-HIGH
V-COMPATIBILITY: MED-HIGH
VH-CONSISTENCY: MEDIUM
VH-STABILITY: MEDIUM; disrupted by F-AR-DMi Sustainability, restabilising at CC
RECEPTIVITY TO CONTEXTUAL VF: Relatively HIGH
RECEPTIVITY to CREATIVITY: high w/ OTC-TV;
RECEPTIVITY to SD: MEDIUM-LOW Cost-savings-related receptivity
CL CONTEXT FAMILIARITY: Starts low and settles/stabilises later alongside VH stability.
VFR>DM-OUTCOME CONSISTENCY: Consistently HIGH and initially POSITIVE but transitioning to NEGATIVE at CCs.
Initial F-CL GIVE CLUES to AR on initial, aspirational values and priorities
Straightforward early Values Framing (VFR) F-CL-DPr > V-CL-DPr > AR-Percep > VFR-AR-DBr > APPEALS to V-CL-DBr > F-CL-DBr-DM: Agreement and Instruction
CL wants the glass and as a consequence seems willing to accept the SD features of high thermal mass and insulation to offset the glazing
V-AR-DMi SUSTAINABILITY temporarily DISRUPTS otherwise STABLE early VH.
VFR disruption potentially RESULTS from AR Values Structure, FORCING agenda?
One way to look at VH contextual recalibration by F-AR for DMi is that new PFR CREATE contextual MICRO-CHALLENGES in unfamiliar contexts.
Framing to Self-enhancing TERMINAL values can PRODUCE both positive or negative sustainability decisions
Challenges ACTIVATE new INSTRUMENTAL values favouring completion and REARRANGE values prioritisation
Challenges see TV-SE OpenToChange values TRANSITION into Conservation values to defend earlier-established V-B GAINS re: glazing.
Challenges see TV-SE OpenToChange values transition into TRANSITION values to propel project completion of TV-SE-based design re: glazing.
Context BECOMES more familiar alongside STABILISED VH
1. Openness to Change (OTC) values here correlated with HIGH VFR PREDISPOSITION and HIGH VFR>DM-OUTCOME CONSISTENCY.
2. V-OTC + VFR PREDISP + DM-OTCM-CONSIST here ALONGSIDE strong VH-CONSIST suggests that V-COMPAT + VFR + VH-STABL = HIGH DM-OTCM PREDICTABILITY
Is it possible that V-COMPAT + VH-STABL = ++DM-OTCM-PREDICT without VFR?
CASE RELATIONAL PATTERNS ANALYSIS


AR16-CL5
Kitchen and basement extension with swimming pool to G2 listed house
F-CL-DPr: CL's DESIGN PROBLEM DPr
FRAMES
F-AR-DBr: AR's DESIGN BRIEF DBr
CONTEXT-SPECIFIC ENERGY DEMAND, PERFECT OPPORTUNITY: "Brilliant, swimming pool, energy demand, GSHP"
BOUNDARY FRAME
F-AR-DMi: SD DECISION-MAKING (INTERIM)
TAR-BRUSH JUMPING TO CONCLUSIONS: "We straight away guess that she didn't want to go down the [full] green route"
EXPLAINED SD OPTIONS IN TECHNICAL TERMS: 'spending, replacing, thicknesses, Conservation implications, thermal performance'; technical descriptions (see AR16-E087; -E084; -E083) (unclear precisely which options)
SD REFRAMING as PROGRESSIVE/LIBERAL or CONSERVATIVE: "Bernie Sanders or Donald Trump – where do you want to go?"
F-AR-CC-DM: SD CRITICAL CHALLENGE / CONFLICT / CHANGE
PRE-JUDGEMENT WITH TECHNICAL DESCRIPTIONS FOR EXISTING WINDOWS: 'spending on replacing, tiny upgrade in thermal performance (exaggerated value); leave breathable timber sash windows, insulate the curtains'
SD DETAILED RECOMMENDATIONS FOR ALTERNATIVES, ADD-ONS + SAVINGS: "leave the windows as single glazed and put in a decent boiler, put in LED lights, put in other little subtle things in areas… Straightaway you've saved £40-50,000 on windows, spend the money more cleverly. "
CLEVER SPENDING FR: "It's just the whole process of [[deciding]] where are you going to spend your money?"
COST, PROGRAMME, IMPLICATIONS of BIG CHANGE; "Suggested process for handling such a significant change: cost implications, communication channels, design implications, programme effects, (neg) evaluation; issue AI'
CONTRACTOR COST IMPLICATIONS & 'RIGHT DECISION' FR: "Contractor will charge you for it, irrespective of whether it's the right decision or not"
TOP TWO ARE THE UNDERLYING TV-SE DRIVING
PATTERN ANALYSIS
Several opportunities for VFR to High, early presence of secondary SD-related V-CL (which were easily detected) missed; V-CL-DPr ripe for VFR providing quality 'lines of argument' to secure more sustainable outcomes. Failure to link specific SD measures to appropriate and ripe V-CL left opportunities for CL-DM to decide against passive SD at any price but in favour of smaller, almost tokenistic measures which were successfully framed as 'clever spending'.
FRAMES-AR
LOGICAL CLUSTERING; ULTIMATE ORDERING/
CONTEXTUALLY RECALIBRATED VH
INITIALLY INSTANTIATED VCL
CLIENT VALUES HIERARCHIES (VH)
CLIENT'S INITIAL VALUES: V-CL-DPr
TV-SE-CONS : Conservation with Quality; Traditional Lifestyle
TV-SE-CONS : Long-term connection; Comfortable retirement lifestyle
TV-SE-CONS : Future-proofing (Security)
IV-SE-CONS : Adaptability for Usability (Hedonism / Security)
LATER VALUES, CONTEXT-UALLY ACTIVATED: V-CL-DMi, V-CL-CC-DM
IV-SE-CONS : Longevity and Lifespan for Usability
TV-SE-CONS : Saving money (Gain)
IV-SE-CONS : Cost control (for saving money / loss prevention)
Conservation; Traditional Lifestyle
Long-term connection; Comfortable retirement lifestyle
Adaptability for Usability
Future-proofing
Conservation; Traditional Lifestyle
Long-term connection; Comfortable retirement lifestyle
Adaptability for Usability
Future-proofing
Adaptability for Usability
Longevity and Lifespan for Usability
Future-proofing
Long-term connection; Comfortable retirement lifestyle
Conservation; Traditional Lifestyle
Saving Money
Adaptability for Usability
Longevity and Lifespan for Usability
Future-proofing
Long-term connection; Comfortable retirement lifestyle
Conservation; Traditional Lifestyle
Long-term connection; Comfortable retirement lifestyle
Adaptability for Usability
Longevity and Lifespan for Usability
Future-proofing
Conservation; Traditional Lifestyle
Cost control (saving money/ loss prevention)
Saving Money
This initial hierarchy and reordering may be due to AR's attempt to associatively map V-CL onto V-AR; he's into conservation, therefore it comes out on top, whereas in
After initial values re-organisation, a relatively stable Values Hierarchy (VH) is established until Cost-related values are introduced much later. Earlier establishment of more complete and stable VH could have been introduced by eliciting CL approach to costs in relation to other V-CL.
V-CL Adaptability for Usability; Longevity and Lifespan for Usability; Future-proofing Long-term Connection all cluster nicely and point to V-CL-CRITICAL/CORE of Comfortable Retirement Lifestyle and provide easy targets.
Saving Money (Gain) and Cost Control (for Saving Money / Loss Prevention) cluster, but a more nuanced, refined reading would suggest that Savings here is about Gain where as Cost Control is about Loss Prevention.
11 CHANGES: 6 up to CC; 5 in CC.
VALUES-CL
CLIENT'S DECISIONS F-CL-DMi / DM / CC
Wealthy, inexperienced private residential client
Complete dominance of V-SE-CONS.
Initial susceptibility to VFR calibrates then settles VH; Later reactivity to VFR slightly adjusts VH with MONEY-SAVINGS RELATED FR, and adjusts again at CC CHANGE
NEEDS FR: Grade 2 listed house, "dig a kitchen and basement extension, swimming pool on the side"
VB APPROACH & PREFERENCES: 'very, very conservation-led"… they wanted "very traditional-looking extension"; "wanted a traditional, country house extension, with traditional mouldings, details, sash windows
VALUES-BASED GOALS: 'Adaptability, usability, long-term connection, lifts, future-proofed etc.'
2 CHANGES
(-) TV-SE-CONS EARLY DISAGREEMENT; GSHP INSTRUCTION: "Nah, I don't want that."
[AR offended]; "fine… We won't do it."
5 CHANGES
(-) IV+TV-SE-CONS GOAL-ORIENTED REMINDER: 'CL wants adaptability for usability, not sustainability' "Her brief was about the adaptability of the building to make it usable for her. … she wants to be there for the rest of her life. So, we have to put lifts in, and all the stuff that makes the building future-proofed."
1 CHANGE
(-/+) TV+IV-SE-CONS AGREEMENT; INSTRUCTION: 'Complete agreement; leave the windows, insulate the curtains; LEDs, HE boiler, clever spending…'
(-) CHANGE ORDER / VARIATION: MOVE EXTENSION 5m (for better views)
2 CHANGES
(-) TV-SE-CONS DISAGREEMENT; INSTRUCTION: 'Changed her mind, went ahead with the change.' "And ideally, I will want the cost from the contractor back as soon as possible, added to the cost and then put into the project figures [cost plan]."
<< CHECK THIS IN THE XSCRPT
AR Jumping to Conclusions and not recalibrating expectations, thereby missing signals and faceing variable disagreement vs agreement, which can be perceived as high decision inconsistency (50/50) but is actually demonstrated as HIGH VALUES-BASED DECISIONMAKING based on HIGH VALUES-CONSISTENCY.
REF: LOGICAL CLUSTERING; ULTIMATE V-CL REORDERING/ HIERARCHY IS CONTEXTUALISED BUT STABLE based on V-CL Clustered Lifestyle Goals.
FRAMES-CL-DM+CC
RELATIONAL ANALYSIS
Early V-CLARITY: MEDIUM and increasing after DMi with VFR introduction of later V-CONS
V-COMPATIBILITY: MEDIUM-LOW (some affinity with Conservation but NEG response to GSHP is off-putting.
VH-CONSISTENCY: HIGH initially, changing with VFR at DMi and CC
VH-STABILITY: MEDIUM
RECEPTIVITY to CONTEXTUAL VFR: MED-LOW
RECEPTIVITY to CREATIVITY: MED-LOW
RECEPTIVITY to SD: MED-LOW
CL CONTEXT FAMILIARITY: Fairly LOW throughout; RECEP-CREATIVITY and CC request to change demonstrate CL unfamilarity BY introducing new issues;
VFR>DM-OUTCOME CONSISTENCY: Fairly LOW and predom. NEGATIVE
Initial F-CL give AR clues to initial, aspirational values and priorities
Potential for Values-Framing appears
VFR-GSHP to VCL-Futureproofing and VCL-Longterm Connection creates VH-Recalibration at design brief that focuses the client on Adaptability and Usability more than Future-proofing .
Potentially resulting from AR Values Structure, forcing agenda?
Tar-brush early conclusions recalibrates AR framing to detailed technical explanations, which ACTIVATES fresh instrumental values, reorganises and sets the CL Values Hierarchy on a stable path. Provides clue as to where the next sets of F-AR should focus, only to be ignored by AR later.
Values framing ACTIVATES fresh TERMINAL values with experience-based presumption of V-CL cost…
Reorders hierarchy and demonstrates that V-CL Saving Money was more important than V-CL Longevity/ Lifespan/ Futureproofing
Challenges ACTIVATE new values (or RECALIBRATE existing values) and rearrange values prioritisation
Drivenness toward V-CL Adaptability for Usability demonstrates the effectiveness of Values-based goals for Values-Stable Clients, even in the face of significant costs for late changes.
ARs need to be thinking harder about what they say to different clients, when, and to what values hierarchy they are attempting to appeal, as well as rembering earlier VH and associated outcomes.
Big decision at the end CC exposes principal value in V-CL DM cluster to reposition at top of VH.
Initial Values and Hierarchy are not the Final VH; Complete dominance of V-SE-CONS and focus on Usability meant direct VFR for sustainability was ineffective. Opportunities missed to VFR based on present and previous VH meant SD outcome was very low.
See also FRAMES Pattern Analysis
CASE RELATIONAL PATTERNS ANALYSIS

Appendix 6.2 Evaluation of plausible rival or alternative explanations

1. Introduction

This appendix evaluates plausible alternative explanations to demonstrate why the explanations given in the main thesis were the most plausible to explain the effects found.

2. Values influence pathways via frames

In Appendix 5.1 §3-4, the refined mapping study MA4 established sequences and relations which provide several plausible but unlikely alternative explanations for the effects attributed to the underpinning sequences captured in the complete, refined 'equation' for values influence pathways via frames shown below, REQ3, which appends a prefix to SEQ2b:

$$\text{REQ3: (V)} \rightsquigarrow \text{VIA\_[FR]} = \langle(\mathrm{V_{AR}}) \rightarrow [\mathrm{F_{AR}}]\rangle \Rightarrow \langle(\mathrm{V_{CL}}) \rightarrow [\mathrm{F_{CL}}]\rangle \cdots$$

Reference to that appendix is suggested to understand the thinking behind the attribution and findings in the main thesis.

3. Meaningful choices

In section §5.3.3 of the main thesis on successful values-framing, it was proposed that all decisions made from values can be meaningful choices, but not all meaningful choices can be favourable to sustainability. This effect can be explained by only one of six alternative propositions, outlined below.

3.1. Values in projects

First, it is plausible that values in projects are just priorities or preferences for certain outcomes. However, accepted definitions of values involve the fundamental aspect of values as both i) preferences for certain outcomes, and ii) prioritised preferences for aims and goals in life—and specifically in AEC projects—which are *most* worthwhile, meaningful, and significant to an individual, therefore requiring a judgement of the relative worthiness of one ideal versus another, whereby they guide both decision-making and behaviour. Thus, to be true, this alternative explanation would require redefining values from the perspective of i) priorities and ii) preferences for certain outcomes, both of which are nonsensical given that the two aspects of values above are specified in accepted definitions of values which have been subject to analysis and development over decades of validated research across most if not all domains of human behaviour. Therefore, this proposition is inapplicable given the definition and specification of values and evidence presented in this research.

3.2. Co-presence or sequential influences

Third, it is plausible that meaningful choices are not made from, or related to, values, but something else like beliefs or attitudes. To be true, this would require either i) redefining values from the perspective of meaningfulness—which is nonsensical because accepted

definitions of values involve the fundamental aspect of values as representing aims and goals in life—and specifically in AEC projects—which are *most* worthwhile, meaningful, and significant to an individual which guide—i.e., influence—both decision-making and behaviour. Or ii) that meaningful choices and values are unrelated. But based on the relationship of values to meaning and meaningfulness, a choice that is meaningful *is meaningful because* it is related to values. Beliefs are anything an individual holds to be true and are vague enough to include values concepts, but then it would defeat the purpose of having two definitions for the same thing. Attitudes concern mental states and dispositions to act, rather than an individuals' conceptualisation of import, meaningfulness, and worth in ones conduct as general guides—i.e., values. Therefore, this proposition is inapplicable given the evidence, definition, and specification of values and meaningful choices.

3.3. Relationship of sustainability and values

Second, it is plausible that sustainability is fundamentally incompatible with at least some values. Evidence could suggest that this might be true in some cases, e.g., valuing profit and achieving sustainability. However, as evidence from studies ES2-ES3 and SS1 showed, valuing profit and achieving sustainability are not incompatible; sustainability is a marketable asset which when well-framed can link to profit-related values. It would be hasty and premature to overlooks the potential opportunity to choose better frames to communicate sustainability options so that they can connect with any values. Therefore, this proposition is inapplicable given the evidence, definition, and specification of sustainability and values. This then established the basis of values and sustainability relationships, and possibility for frames to communicate sustainability to values.

3.4. Frames effects on values

Fourth, it is plausible that values are not primed and activated/deactivated by frames, but by some other stimulus. Relatedly, it is plausible that values do not contextually reprioritise in response to frames. To be true, this would require disaggregating frames influences on values from any/all other plausible influences to examine frames and values interactions amongst any other influences to determine their presence and any relative significance. Such a disaggregation and analysis were precisely the purpose of Structured Exploratory Study ES3 and both MA3 and MA4. These studies conclusively demonstrated that values are primed and activated/deactivated by frames, and that values contextually reprioritise in response to frames. Therefore, this proposition is inapplicable given the evidence presented in this research. This then established the basis of frames influences on values which consequently helped show how opportunities to facilitate spaces for meaningful choices can be made and spent from a values-and-frames perspective.

3.5. Values-frames effects on contextually prioritised values hierarchies

Fifth, it is plausible that successful values-frames were not related to the values in contextually prioritised and reprioritised values hierarchies, but to some other stimulus. To be true, this would require, in addition to the above §3.1-3.3, re-examining i) values' relations with other values in terms of ordering, i.e., priority; ii) the effects of problem-frames on values in priority order; and iii) the effects of values on decision-frames; to then evaluate alternative explanations.

Concerning (i), studies ES2-ES3 (in the main thesis §4.3-4.4 and in Appendices-4.3 and 4.5) conclusively demonstrated how and why values were expressed not in any random order, but in prioritised hierarchies related to the problems to be solved and decisions to be made. Studies SS1 and SS2 supported these conclusions, which were specifically extended in SS2 to show the significance of dominant values in expressed values

hierarchies and systems on sustainability framing and decision-making. Concerning (ii) the effects of problem-frames on values in priority order, the fundamental principles were initially identified in ES2, conclusively demonstrated in ES3, and then systematically established in not only SS1, Section §5.2 in the main thesis, but also SS2a-SS2b, Section §5.3, where values-frames were clearly shown to be most effective with higher-priority values. Concerning (iii) the effects of prioritised values on decision-frames, the fundamental principles were initially identified in MA2, conclusively demonstrated in ES3c, and then systematically established in not only SS1 but also SS2a-SS2b, where decisions were more strongly influenced by higher-priority values based on decision-frames reflection of those priorities and strengths. Therefore, this proposition is inapplicable given the evidence presented in this research. Taken together, this then established the basis of Values-frames effects on contextually prioritised values hierarchies which consequently helped conclusively demonstrate how and why opportunities to facilitate spaces for meaningful choices can be made and spent from a values-and-frames perspective.

3.6. Framing to dominant values

Thus, the sixth and only plausible explanation for values-frames repeatedly influencing favourable decisions is through framing to dominant values by using communication e.g., via timing, language, intonation, emphasis, phraseology, to formulate problem- and solution-frames that are varyingly-compatible with values in prioritised hierarchies. The only 'condition' where meaningful choices were favourable *and withstood challenge* were those made from values that were not only dominant, but also in hierarchies that were stable. When frames were compatible with values that remained dominant and stable, meaningful choices endured challenge. This can explain clients 'changing their minds' demonstrated through decision shifts and changes when earlier choices were also linked to values which were lower priority. This means that meaningful choices made from dominant values in stable values systems can endure challenge.

Most importantly, this means that only values-framing to dominant values in context can consistently endure challenge, regardless of whether they are aspirational or pragmatic, self-enhancing or self-transcending, conservative or liberal/open-to-change. Only this can explain the effects, shifts, and changes seen across 124 units-of-analysis in 26 cases from commercial-, design-, and sustainability-oriented architectural professionals. The mapped evidence from SS2 also showed that meaningful choices made from dominant values can endure challenge.

4. Plausible interrelationships

To support the conclusions above and those made in the main thesis, a table was devised to demonstrate thirty-two plausible conditions of how Values-framing, sustainability decisions, and meaningful choice interrelate. Given the definitions and specifications of all the studied variables and associations, and the evidence presented in this research, the only explanations supported are those described by conditions C1-2, C5-6, C9-10, C17-18, C19-20, C25-26, C27-28, thus summarising the conditions under which values and frames influenced variously favourable decisions as meaningful choices.

Table 1 Conditions of Values-framing, sustainability decisions, and meaningful choice (supported explanations in grey)

Cond	Values		Frames		SD+/-		MCh	Description
C1	AV	+	VF	=	SD++	=	MCh	Decisions based on any values are meaningful choices.
C2	**PV**	+	VF	=	SD+	=	MCh	
C3	¬V	+	VF	=	SD	=	¬MCh	Decisions not based on any values are NOT meaningful choices.
C4	¬V	+	F	=	SD	=	¬MCh	

C5		$\frac{AV}{PV_{t1}}$		+	VF (AV)	=	SD++	=	MCh	Values-framing to any dominant values can influence favourable and enduring decisions (which are meaningful choices).
C6		$\frac{PV}{AV_{t1}}$		+	VF (PV)	=	SD+	=	MCh	
C7		$\frac{AV}{PV_{t1}}$		+	VF (PV)	=	SD+	=	MCh	Values-framing to any non-dominant values can influence favourable and enduring decisions (which are meaningful choices).
C8		$\frac{PV}{AV_{t1}}$		+	VF (AV)	=	SD+	=	MCh	
C9		$\frac{AV}{PV_{t1}}$		+	VF (PV)	=	WEAK SD	=	MCh	Values-framing to any non-dominant values can influence favourable but weak decisions (which are meaningful choices).
C10		$\frac{PV}{AV_{t1}}$		+	VF (AV)	=	WEAK SD	=	MCh	
C11		$\frac{AV}{PV_{t1}}$		+	VF (AV)	=	SD++	=	¬MCh	Values-framing to any dominant values can influence favourable and enduring decisions but are NOT meaningful choices.
C12		$\frac{PV}{AV_{t1}}$		+	VF (PV)	=	SD+	=	¬MCh	
C13		$\frac{AV}{PV_{t1}}$		+	VF (PV)	=	SD+	=	¬MCh	Values-framing to any non-dominant values can influence favourable and enduring decisions but are NOT meaningful choices.
C14		$\frac{PV}{AV_{t1}}$		+	VF (AV)	=	SD+	=	¬MCh	
C15		$\frac{AV}{PV_{t1}}$		+	VF (PV)	=	WEAK SD	=	¬MCh	Values-framing to any non-dominant values can influence favourable but weak decisions but are NOT meaningful choices.
C16		$\frac{PV}{AV_{t1}}$		+	VF (AV)	=	WEAK SD	=	¬MCh	
C17	$\frac{AV}{PV_{t1}}$	→	$\frac{PV}{AV_{t2}}$	+	VF (AV)	=	SD--	=	MCh	Values-framing to previously dominant values (at time t_1) but no longer dominant values (at t_2) can influence *unfavourable* decisions, but are still meaningful choices.
C18	$\frac{PV}{AV_{t1}}$	→	$\frac{AV}{PV_{t2}}$	+	VF (PV)	=	SD-	=	MCh	
C19	$\frac{AV}{PV_{t1}}$	→	$\frac{PV}{AV_{t2}}$	+	VF (PV)	=	SD+	=	MCh	Values-framing to currently dominant values (at time t_2) but not previously dominant values (at t_1) can influence *favourable* decisions, and are meaningful choices.
C20	$\frac{PV}{AV_{t1}}$	→	$\frac{AV}{PV_{t2}}$	+	VF (AV)	=	SD+	=	MCh	
C21	$\frac{AV}{PV_{t1}}$	→	$\frac{PV}{AV_{t2}}$	+	VF (AV)	=	SD--	=	¬MCh	Values-framing to previously dominant values (at time t_1) but no longer dominant values (at t_2) can influence *unfavourable* decisions, but are NOT meaningful choices.
C22	$\frac{PV}{AV_{t1}}$	→	$\frac{AV}{PV_{t2}}$	+	VF (PV)	=	SD-	=	¬MCh	
C23	$\frac{AV}{PV_{t1}}$	→	$\frac{PV}{AV_{t2}}$	+	VF (PV)	=	SD+	=	¬MCh	Values-framing to currently dominant values (at time t_2) but no longer dominant values (at t_1) can influence *favourable* decisions, and NOT meaningful choices.
C24	$\frac{PV}{AV_{t1}}$	→	$\frac{AV}{PV_{t2}}$	+	VF (AV)	=	SD+	=	¬MCh	
C25	$\frac{AV}{PV_{t1}}$	→	$\frac{PV}{AV_{t2}}$	+	VF (PV)	=	SD--	=	MCh	Values-framing to currently dominant values (at time t_2) which were previously dominant (at t_1) can influence *unfavourable* decisions, and are meaningful choices.
C26	$\frac{PV}{AV_{t1}}$	→	$\frac{AV}{PV_{t2}}$	+	VF (AV)	=	SD-	=	MCh	
C27	$\frac{AV}{PV_{t1}}$	→	$\frac{PV}{AV_{t2}}$	+	VF (PV)	=	SD+	=	MCh	Values-framing to currently dominant values (at time t_2) which were previously dominant (at t_1) can influence *favourable* decisions, and are meaningful choices.
C28	$\frac{PV}{AV_{t1}}$	→	$\frac{AV}{PV_{t2}}$	+	VF (AV)	=	SD+	=	MCh	
C28	$\frac{AV}{PV_{t1}}$	→	$\frac{PV}{AV_{t2}}$	+	VF (PV)	=	SD--	=	¬MCh	Values-framing to currently dominant values (at time t_2) which were previously dominant (at t_1) can influence *unfavourable* decisions, and are NOT meaningful choices.
C30	$\frac{PV}{AV_{t1}}$	→	$\frac{AV}{PV_{t2}}$	+	VF (AV)	=	SD-	=	¬MCh	
C31	$\frac{AV}{PV_{t1}}$	→	$\frac{PV}{AV_{t2}}$	+	VF (PV)	=	SD+	=	¬MCh	Values-framing to currently dominant values (at time t_2) which were previously dominant (at t_1) can influence *favourable* decisions, and are NOT meaningful choices.
C32	$\frac{PV}{AV_{t1}}$	→	$\frac{AV}{PV_{t2}}$	+	VF (AV)	=	SD+	=	¬MCh	

Legend:
AV = any values
PV – previous values
VF = values frames
SD+/- = increase or decrease in sustainability/sustainable designs
MCh = meaningful choice
¬V = no values
F = frames
t1…t2…tn = values at Time 1, Time 2… Time n

Appendix 7 Research Outputs

Contents

University of Brighton

Doctoral College Research Student Conference

Abstract Submission Guidelines and Form
The Conference is a forum to showcase the wide range of research carried out by postgraduate research students. Authors are requested to select their preference for oral or poster presentations, or both. The abstracts should be clear to non-subject specialists.

Submission Form

Presenting Author		
Title: MR	**Forename: RICHARD PERRY**	**Surname: KULCZAK**
School: ENVIRONMENT AND TECH.	**Year of Study: 2**	
Degree programme *(select as appropriate)* **EngD ☐ MD ☐ MPhil/PhD ☒ Prof Doc ☐ Other (please specify):**		
Abstract		
Title: Managing sustainability: Values and frames influences in design decision processes		
Authors: *Presented as:* *Kulczak R.P. (1,3), Piroozfar P.A.E. (1), and Harder M.K. (1,2,3)* *(1) Built Environment Division, School of Environment and Technology; (2) China National Thousand Talents Professor and Sustainable Behaviour Research Group – Fudan University Shanghai; (3) Values and Sustainability Research Group, University of Brighton*		

Abstract
Delivering projects to minimum requirements in the UK construction industry can come at the expense of longer-term sustainability goals and unseen impacts. Without measurement, such trade-offs often remain unaccounted for. Therefore, managing sustainability becomes a significant challenge, with subsequent downgrading to a 'box-ticking' exercise—itself a process-orientated procedure with little attention to broader project impacts or end conditions. A more direct and holistic approach to understanding and later influencing sustainability in design decision making is to research the values and problem framing that occurs in early practitioner-client interactions. By reinterpreting underlying processes in design decision-making for architectural sustainability, key themes and sub-processes can be transparently examined, facilitating their engagement and enabling.

Early findings suggest that reciprocal influences of human values and decision-problem framing play a fundamental role in shaping sustainability decision processes. Explicitly and implicitly, practitioners appear to gather and evaluate interpersonal and values-orientated information, on which they base assessments of a client, their position on sustainability, and its flexibility. Such intuitive analyses provide practitioners with beneficial psychosocial heuristics to approach and advance sustainability issues. These 'indicators' provided guidance on using situation-appropriate communication frames to achieve particular results. Thus, values engagements and influences, on and in conjunction with problem-frames, structure and guide sustainable design decision processes. Values and communication frames appear reciprocally influenced and self-reinforced, amounting to structural psychosocial drivers, or barriers, of sustainability.

These results are expected to have implications for practitioner-stakeholder interaction processes in design professions and design management, highlighting the need for future work triangulating and disseminating.

Poster Title
Values and Frames in Sustainable Design: Influences of human values and decision-problem framing in sustainable design decision-making processes.

Keywords (*up to five*) decision-making, frames, human values, stakeholder engagement, sustainability management.

Type of presentation (*select as appropriate*)

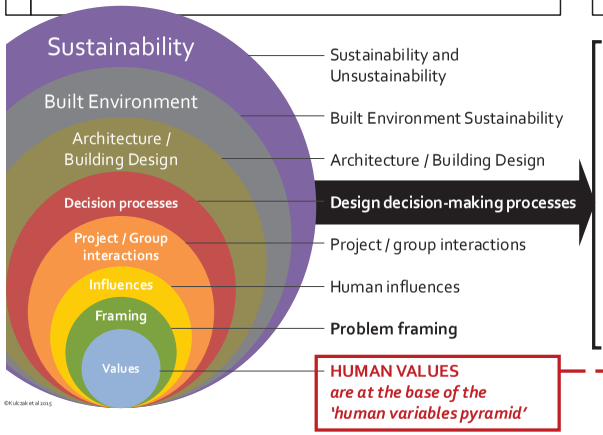
Poster ☐ Oral ☐ Both ☒

Other (optional)
List the name(s) and emails of industrial partners likely to be interested in your research findings who could be invited to attend the conference.
None, thank you.

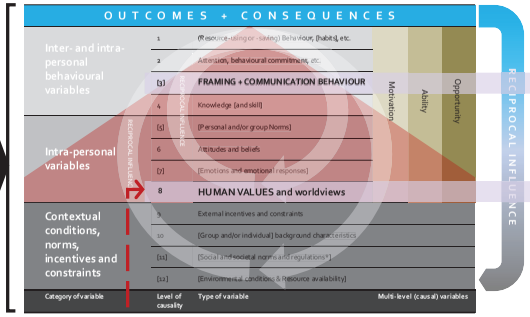
A research question:

*What are the **influences** of **human values** on problem framing in sustainable design decision processes?*

1 *Where to look?*



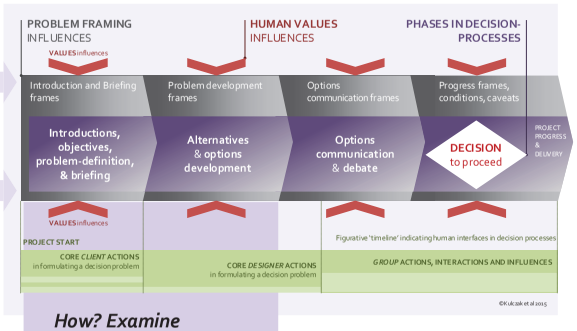
2 *What processes and components to look at? What relationships?*



NOTES: First two columns, except for bracketed items, were adapted from Stern & Ostrom, 1987, by Ščasný, Urban & Zvěřinová, 2013. Fourth column adapted from Olander & Thøgersen, 1995. Fifth column was adapted from Stern, 2000. Bracketed items added by the author.

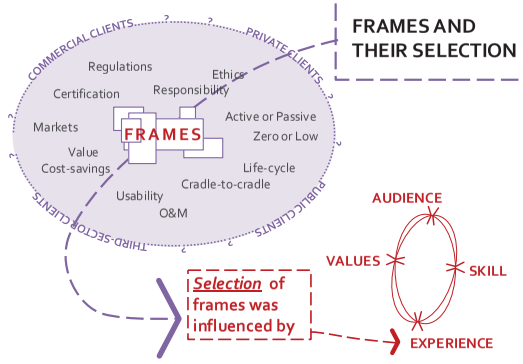
* Social and societal norms and regulations include both written and unwritten rules, guidelines, laws and regulations that may or may not be legally binding. They exist outside and in advance of any effects on intrapersonal variables.

2 *What influences? What relationships?*



How? Examine influences through key informant interviews.

A *What FRAMING outcomes so far?*



***Selection** of frames was influenced by*

FRAMES AND THEIR SELECTION

B *What VALUES outcomes so far?*

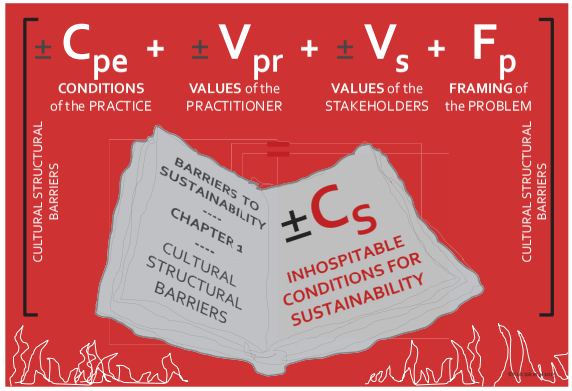
Reciprocal influences: **Frames** ⇄ **Values**

Sustainability decision processes

Values influence

- **Engagement** Methods & Techniques
- **Frames** of Reference & Problem Frames
- **Communication** Frames, Approaches, Methods, Techniques
- **Sustainable Design** and decision-making processes

C *What THEORETICAL outcomes so far?*



Richard Perry Kulczak
Dr Poorang Piroozfar
Prof Marie Harder

University of Brighton BERG Built Environment Research Group

Human values and problem framing as influential heuristics in sustainable design decision processes

Richard Perry Kulczak
Values and Sustainability Research Group, and School of Environment and Technology, University of Brighton

Poorang A.E. Piroozfar
Senior Lecturer, @BEACON Research Group, School of Environment and Technology, University of Brighton

Marie K. Harder
Professor, Values and Sustainability Research Group, University of Brighton; and China National Thousand Talents Professor, Sustainable Behaviour Research Group, Fudan University, Shanghai, China

Abstract: Sustainability in the UK architecture, engineering, and construction (AEC) industry is well received. However, many projects only deliver the minimum requirements. Frequently this is at the expense of longer-term sustainability goals and unseen impacts. These trade-offs are not necessarily accounted for. Therefore, managing sustainability becomes a significant challenge as a process-oriented procedure with little attention to broader project impacts or end conditions. To address this recurring shortcoming, one way forward is to re-examine and re-evaluate fundamental sub-processes within sustainability decision processes whilst incorporating long-term effects. Research is currently being undertaken to investigate 'human values' and 'communication frames' in managing decision processes for sustainability.

The first stage of this on-going research presents the results of interviews carried out to investigate fundamental human interactions and influences that impact sustainability decision processes. Early findings suggest that reciprocal influences of human values and decision-problem framing play a fundamental role in shaping sustainability decision processes. Explicitly and implicitly, practitioners appear to gather and evaluate interpersonal and values-orientated information on which they base assessments of a client, their position on sustainability, and its flexibility. Such intuitive analyses provide practitioners with beneficial heuristics to approach and advance sustainability issues. These 'indicators' provided guidance on using situation-appropriate communication frames to achieve particular results. Values engagements and influences, on and in conjunction with problem-frames, structure and guide sustainable design decision processes. Thus, human values and communication frames appear reciprocally influenced and self-reinforced, amounting to structural psychosocial drivers, or barriers, of sustainability.

Keywords: client-practitioner relationships, communication frames, decision-making heuristics, human values, psychosocial influences, sustainability management.

MANAGING SUSTAINABILITY THROUGH DECISION PROCESSES: THE INFLUENCE OF VALUES AND FRAMES

Richard Kulczak[1], Poorang A.E. Piroozfar and Marie K. Harder

School of Environment and Technology, University of Brighton, BN2 4GJ, UK

Delivering projects to minimum requirements in the UK construction industry can come at the expense of longer-term sustainability goals and unseen impacts. Without measurement, such trade-offs often remain unaccounted for. Therefore, managing sustainability becomes a significant challenge, with subsequent downgrading to a 'box-ticking' exercise—itself a process-orientated procedure with little attention to broader project impacts or end conditions. A more direct and holistic approach to understanding and later influencing sustainability in design decision making is to research the values and problem framing which occurs in early practitioner-client interactions. By reinterpreting underlying processes in human decision-making for architectural sustainability, key themes and sub-processes can be transparently examined, thus facilitating their engagement and enabling. Early findings suggest that reciprocal influences of human values and decision-problem framing play a fundamental role in shaping sustainability decision processes. Explicitly and implicitly, practitioners appear to gather and evaluate interpersonal and values-orientated information, on which they base assessments of a client, their position on sustainability, and its flexibility. Such intuitive analyses provide practitioners with beneficial psychosocial heuristics to approach and advance sustainability issues. These 'indicators' provided guidance on using situation-appropriate communication frames to achieve particular results. Thus, values engagements and influences, on and in conjunction with problem-frames, structure and guide sustainable design decision processes. Values and communication frames appear reciprocally influenced and self-reinforced, amounting to structural psychosocial drivers, or barriers, of sustainability.

Keywords: decision-making, human values, stakeholder engagement, sustainability management.

INTRODUCTION

Sustainability in the UK construction industry is well received; building designers and construction professionals are understood to be well-versed in practical processes and technological solutions. However, many projects only deliver minimum requirements, frequently at the expense of longer-term sustainability goals and unseen impacts (Williams and Dair 2007, Dowson *et al*. 2012). Currently, these trade-offs are not specifically accounted for because they either cannot be measured or there is little willingness to measure them. Sunk costs and indirect impacts are notoriously challenging to disaggregate, and cost versus value trade-offs are established problems (Mills 2013). This scope of trade-offs is not currently measured in sustainable building assessment systems, nor are they effectively addressed in regulations in a broad, holistic context commensurate with c21st thinking (Moe 2007).

[1] entec@brighton.ac.uk

Kulczak, R, Piroozfar, P A E and Harder, M K (2015) Managing sustainability through decision processes: The influence of values and frames *In:* Raidén, A B and Aboagye-Nimo, E (Eds) *Procs 31st Annual ARCOM Conference,* 7-9 September 2015, Lincoln, UK, Association of Researchers in Construction Management, 437-446.

Managing sustainability therefore has become a significant challenge, leading to its subsequent downgrading to a 'box-ticking' exercise in which points are given to seemingly useful measures and assessed as a process-orientated procedure with little attention to broader project impacts or end conditions. This work focuses on the missed opportunity to obtain a measure of the degree of sustainability of a project at a very different stage of the process—the initial practitioner-client interaction stages. It is in these early stages that the future agreed project is framed, with that framing being formed by contributions from both parties. Decision-making later follows broadly from that framing and may become less susceptible to significant change if based on stronger foundations. The human interactions occurring in this early, critical phase might be shown to be crucial to subsequent pathways and outcomes, which are examined in detail via in-depth interviews at the individual level. These fundamental human interactions and influences are almost entirely overlooked in sustainable design decision-making, particularly the initial interpersonal exchanges that set the character of and outlook for sustainability. Yet research in sustainability science and environmental sustainability suggest that values and frames are key fulcra in human psychosocial processes involved in bigger-than-self issues, including the long-term and unseen impacts from building design (Arvai *et al* 2012, Darnton 2008, Crompton 2010, Chilton *et al*. 2012).

The two questions addressed in this research are closely interlinked. What influences in early sustainable design decision processes are the result of human interactions? What are the influences of human values and problem framing in sustainable design decision processes? The aim of this research therefore is to investigate missing links in human psychosocial dimensions of sustainable design decision processes. Here, advances can be made to promote the sustainability agenda at an early and fundamental stage of the procurement process. These links are missing because they have been investigated insufficiently and are not leveraged in current practice.

The objective of the first phase of this three-phased research project investigates the variables influencing sustainable design decision processes at an individual level, by interviewing practitioners in-depth about their early practitioner-client interactions regarding sustainability. This paper reports on the initial findings of the first phase interviews. Phases 2-3 later will involve further interviews, focus-group workshops, and surveys with different companies to examine first interpersonal and then group-based influences of values on decision problem framing. This approach is intended to expand the sustainability debate by recognising the dynamic, complex, and multiple human variables implicit in everyday sustainable design decision processes. If found in Phase 1, the following phases will connect construction and design management research to literatures in values and framing for sustainability.

This is important because examining the human, psychosocial processes and influences in sustainability provide a new approach to sustainability, placing the individual in the context of the social; the obvious immediate in the context of unseen consequences and impacts; and smaller decisions in the context of larger impacts. This kind of approach is alluded to by authors advocating innovation and broader thinking for sustainability (see e.g. Moe 2007, Hoffman and Henn 2008, Brand 2004).

LITERATURE REVIEW

Increasingly since 2000, researchers have recognised the importance of incorporating social dimensions in generating solutions to sustainability issues in architecture (Brand 2004, Guy and Moore 2004, Cole 2000, Guy and Shove 2000). This has

occurred alongside recognition of the influence and importance of underlying inter- and intra-personal drivers and barriers arising from human values, beliefs and norms; motivations, opportunities and abilities; and other characterisations (Darnton 2008, Guy 2006, Henry and Dietz 2012, Schweber and Leiringer 2012). Intricate, compound, scale- and time-varying ecological, social, political, and economic conditions influence human sustainability, whereby the *"processes of decision-making directly affect the sustainability of their outcomes"* (Adger and Jordan 2009: 6). Therefore, more holistic approaches to decision-making, and setting the stage with better problem-framing, can begin to address multi-scalar and complex influences on sustainability decision-making (Haughton and McGranahan 2006). Holistic approaches to decision-making in design for sustainability that combine 'small everyday' with 'large planned' strategic decisions can consciously, and unconsciously, shape the broader impacts of architecture and urban sustainability (Haughton and McGranahan 2006). Moreover, the scale and domain in decision planning is a critical dimension to recognising the full scope of built environment influence and impact (du Plessis 2011, du Plessis and Cole 2011, Guy and Marvin 2001, Brand 2004, Kibert *et al*. 2006). This is particularly relevant because certain processes in sustainability *"can be more readily observed at some scales than others"* and impacts can be simultaneously direct and indirect (Alcamo *et al*. 2003).

Decision-making is a complex cognitive process influenced by a variety of interacting factors from multiple sources frequently beyond conscious awareness. Facts, evidence, and information only play partial roles in decision-making practices, where human emotions, beliefs, and values present significant influences at both individual and cultural levels (e.g. Arvai *et al*. 2012, Chilton *et al*. 2012, Crompton 2010, 2013, Darnton 2008). Socio-cultural norms, shared values, individual beliefs, attitudes, values, and emotions are all very closely linked and influence decision processes (Crompton 2010, Darnton 2008, Stern 2000, Dietz *et al*. 1998).

Considerable research suggests that values and frames are key leverage points in human psychosocial processes involved in bigger-than-self issues, such as the long-term and unseen impacts in building design (e.g. Arvai *et al*. 2012, Darnton 2008, Crompton 2010, Chilton *et al*. 2012). This potentially avoids making easily-overturned gains achieved through financial incentives or selective provision of information (Kollmuss and Agyeman 2002). Recent research has shown how the recognition of human values is emerging in 'soft' project management for construction sustainability that seeks new routes for value creation through better engagement with people in holistic, open, and meaningful ways (Mills 2013, Novak 2013, Thomson *et al*. 2003).

Values are fundamental, underlying drivers of motivations and behaviour, signifying what is important to people (Schwartz 2009). As Cheng and Fleischmann (2010: 1) summarise, *"values are a unique psychological construct that are prominent antecedents to decision-making and behaviour at the individual and societal levels of analysis."* Values are important to managing sustainability based on three principal facets; they are: an identifiable variable in psychosocial processes; measureable; have shared meanings across cultures (c.f. Stern *et al*. 1998, Dietz *et al*. 1998, Oreg and Katz-Gerro 2006, Schwartz 2011, Harder *et al*. 2014, Hoover and Harder 2015, etc.).

In addition, values are also closely connected with how people make sense of the world: *"…one way this connection manifests itself is through frames. Frames in general are both mental structures that order our ideas; and communicative tools that*

evoke these structures and shape our perceptions and interpretations over time (Holmes et al. 2011: 36)." Various levels of 'framed ideas' or 'framing contexts' include snap-shots, broader perspectives, and entire mind-sets. Value judgements, as assessments of value or worth, can be considered a type frame encircling what is and is not important, thereby reflecting the values of the 'framer.' As Myers (2010: 12) asserts, *"the label [or frame] reflects the judgment."*

Framing in decision-making is a heuristic or interpretative mechanism that provides a mental representation of the decision-problem that identifies the available options for an issue under consideration (Beresford and Sloper 2008, among others). Problem-framing is a key factor in decision processes, arising as a resultant sub-set of values and broader frames in a reciprocal and mutually influential relationship (Robbins *et al*. 2008, Holmes *et al*. 2011). The way in which options are framed, as well as the order they are presented, have significant impacts on the outcomes of decisions, which can also produce results opposite of intentions (Darnton 2008, Jones *et al*. 2012). Beamish and Biggart (2010: 2) discovered that *"social heuristics—collectively constructed and maintained interpretive decision making frames—influence economic decision making practices and material outcomes,"* having led to at least one case of failed innovation in large-scale commercial construction. Together, values and frames can be employed in sustainability *"...toward systemic change that is less susceptible to variations in behaviour and ultimately reinforcing the more consistent, underlying principles or standards from which our behaviour derives"* (Holmes *et al*. 2011).

The literature above indicates that values and problem framing are crucial factors for structuring decision making processes, yet they have not been explicitly studied in design management interactions; the work described here examines that area.

RESEARCH DESIGN AND METHODOLOGY

The Phase 1 research has been designed, planned, and iteratively fine-tuned based on emerging results and findings from field research and literature in constant comparison. It takes a case-based grounded approach, involving key individuals and groups of decision-makers from building design companies and client bodies. The domain of study is the interpersonal practices of individuals in groups of two or more, seen from the perspective of building designers, and how those individuals communicate, interact, and influence sustainable design decisions. A case-based approach allows for each organisation ('horizontally') and project ('vertically') to be naturally identified as a case or 'category of analysis' (Yin 2009: 12).

Utilising a grounded analytical approach provided the opportunity to collect and analyse the data based on rigorous, linked recording, and examination methods capable of providing records of developments, or 'chains of evidence' also used in case study methods (Yin 2009: 41). By constantly comparing collected data against literature, against conceptual and theoretical understandings, this approach allowed building up an increasingly broad perspective towards explanations grounded in findings yet related to literature. Through coding and categorising the data according to concepts and themes as appropriate descriptions for the apprehended phenomena, the data was coded and assembled directly from the different groupings of participants and their experiences as expressed in their responses (Strauss and Corbin 1994, Creswell 2003). As Charmaz (2011: 501) asserts, *"data collection and analysis reciprocally inform and shape each other through an emergent iterative process."*

DATA COLLECTION AND ANALYSIS

For the Phase 1 interview process, participants have been chosen based on having a minimum of 10 years professional practice experience with sustainability issues in building design were initially identified in accordance with a set of detailed procedures—ten were invited through the lead authors' professional network. This was based first on length of experience in years, second on experience in varied sectors, third on availability and accessibility in a relatively short timeframe. With an anticipated recruitment response rate at 50% (Baruch and Holtom, 2008), it was felt that a 60% response for the first of three phases was acceptable. Four architects, one technologist, and one design engineer were interviewed from four different organisations. A series of open-ended questions were based on the five-part objective and selected by their ability to capture key underlying processes in approaching, engaging, framing, delivering, and 'futuring' sustainability. This was bounded in such a way as to capture key exchanges, conditions, and constructs at the spaces where people interact with and influence sustainability in decision processes. The interviews discussed issues about engaging key stakeholders in decision processes for sustainable design, including such matters as raising sustainability topics, committing to sustainable solutions, making or accepting changes affecting project sustainability.

First, interview transcripts were broadly reviewed, then closely analysed, and distilled into a series of statements and highlights of key points, prevailing threads, and observations. Then transcripts were 'open' coded and categorised with an 'open frame' in constant comparison between coding, memos, and transcripts, in which phenomena arising were classified purely by their content and meaning rather than assigned any predetermined concepts. Thus, analysis naturally extracted codes that were bounded by the questions themselves, thereby inherently limiting the range of codes arising. These were rationalised and refined into several explanatory codes and then categorised according to predominant topics that arose. Responses naturally fell into six categories: engagement, approach, drivers/influences, actions, framing, values, (participant) observations. All analyses were cross-referenced into an analysis matrix for crosschecking. To identify specific influences of values and frames, the transcripts and analysis matrix were re-examined with a 'values lens' and a 'frames lens' to draw out relationships and influences from these perspectives (Harder *et al*. 2014). These were separately re-coded into frames used by practitioners to represent sustainability, and 'value statements', giving rise to several subcategories of values and framing. Codes and categories were re-compared with corresponding texts for consistency.

Results identify not only that values and problem-framing influence decision processes, but also that these influences vary in scope and magnitude depending on the value a practitioner places on sustainability, and the practice environment, in relation to other relevant factors. These include practitioner and practice value-systems, individual(s) with whom they interact, the project itself, and relevant conditions of the prevailing environment, whether implicit or explicit. The way practitioners progress sustainability appears to be closely associated with their 'value-system', influenced by their experience, company 'focus' and value-system. Reflection on these interviews, in constant comparison with the literature, has revealed a structure of key design decision processes and influences.

From the interviews, it appears unanimous that decisions about 'levels of sustainability' are raised by practitioners with their clients almost from 'day one' because of their complexity and cost implications, necessitating early commitment. Practitioners engaged stakeholders with sustainability issues 'where they are at'—they

endeavour to discover what their clients are 'like' and are 'willing to accept' in terms of functionality, aesthetics, and sustainability. As one practitioner advised: *"when I'm first meeting [a stakeholder], I'm trying to gain an impression of what they're like, what they might think like in all sorts of ways. ...if somebody doesn't like me, they're not likely to engage [with] us."* It seems regardless of background experience or practice values, these participants pursue client boundaries, attempting to advance them towards improved sustainability.

In these initial 'values engagements', it appears that intuitive judgements of 'what a client is like' are made alongside more overt enquiries on issues of importance such as design and sustainability interests, 'likes/dislikes', motives and drivers. During appointment and briefing processes, practitioners examined new client priorities and formulated both explicit and intuitive assessments of such issues. Value judgements seemed to be made about the 'type of person' their client is—taking the form of social status, wealth, political association, profession/career, personal interests, etc. These judgements provided practitioners with beneficial psychosocial clues to approach and advance sustainability issues. Practitioners extracted and evaluated interpersonal and values-orientated information, on which they based assessments of clients, their position on sustainability, and its flexibility. These 'indicators' provided guidance on using situation-appropriate communication frames to achieve particular results.

Responses converged to suggest that sustainability commitment is treated initially as a boundary concept, and then a binary concept by these participants: once an estimate of a stakeholder's boundaries is made on a spectrum of interest-versus-disinterest (which is amenable to adjustment), sustainability appears to be treated as a binary concept of accept-reject, us-them, etc. One participant explained, *"if you are starting to get some interest, you can go quite a long way down this particular line."* The issue at hand is how far; *"that'll very much depend on what you as an individual want; I come with my sustainability agenda and ideas, but at the end of the day, you're the client, […] you're the one who says 'well, I like the idea of [it, but] that's not a big priority'."*

Where the views of practitioners began to diverge can be represented by two 'spectra' of practitioner experience emerging from interviews: design-led and commercial-led. It became possible to detect this spectrum clearly after the analysis of participant's use of framing and was supported by further references in their values-engagements and values-statements. Most importantly, values-engagements appear to have occurred both explicitly and implicitly, and values-statements were utilised through various forms of assessment in decision processes. One way this manifested was how sustainability decision-problems were framed and formulated—thus setting the decision-making stage.

Framing of sustainability measures appeared in the interview transcripts in a multiplicity of terms: active or passive, regulations, markets, costs, value, responsibility, ethics, life-cycle, usability, operation, maintenance, etc. The fact that one design-led practitioner acknowledges engaging with commercial clients very differently than private or public sector clients suggests that the selection of frames is multifaceted and influenced by audience, skill, experience, and values. With commercial-led practitioners, the framing of sustainability appeared heavily influenced by: cost, regulations, and usability or operations, but also to varying extents by practitioners 'pushing the boundaries' with their clients and regulatory authorities. This was derived from conversations with at least three different practitioners, one of whom advised these were prevailing tendencies. However, with

design-led participants it seemed the reverse: sustainability was driven by practitioner and sometimes client, with either or both pushing the boundaries; regulations represented bare minimum, lowest thresholds rather than drivers of achievement, although cost remained central. One practitioner explained how this was the case with two different clients, and appeared to intimate through body language that this was the norm in their practice. Hence, practitioners appeared to develop experience-based biases that remained present between projects. These 'biases' then informed how they framed sustainability problems to subsequent clients and stakeholders. Drawing on value judgements to inform the appropriate use of frames, the values of both practitioner and client appear to have influenced the framing of decision-problems used by practitioners, which in turn influenced decision processes. Thus, it was possible to discern that: a) framing was influenced by values, b) framing was chosen based on experience of which frames are found to speak to certain clients, and c) framing and values operated in an iterative, self-reinforcing combination.

Interestingly, it seems that the overwhelming majority of participants appeared to broadly engage with sustainability issues for their own, different reasons: some commercial; some an ethical 'altruism' and personal commitment; one an almost paternal-community spirit of responsibility. The majority of commercial-led practitioners favoured strongly promoting sustainability, but in a pragmatic manner commensurate with the requirements of their client base. This might suggest that the practitioners' individual approach does not necessarily correspond completely with the practice approach. Furthermore, the two rough groupings of participants seemed to report almost polar approaches. From the commercial-led: a 'push away from the bottom baseline', encouraging clients away from the 'only if necessary' mind-set, and client-driven cost-centred approaches. From the design-led: 'pull toward the top performance', 'shared enthusiasm', 'lead-by-example' approaches. Broadly speaking, the commercial-led practitioners' self-reporting of the 'practice environments' appear aligned more closely with (Schwartz's) extrinsic values, alongside lesser-activated intrinsic values. Design-led practice environments appear aligned with intrinsic values, whilst retaining an explicit awareness of extrinsic values-related issues.

From this group of participants, it appears plausible to suggest that values of the practitioner are reflected in three psycho-social constructs. First, the 'organisational focus' they promote (design-led or commercial-led in these cases). Second, the 'types of clients' they prefer to engage with (commercially or environmentally orientated, etc.). Third, the extent to which practitioners will continue promoting sustainability issues when resistance and barriers are encountered. Furthermore, it is also reasonable to conclude that a) the conditions of practice, combined with practitioner and client values, and the problem frames these two perpetuate can provide inhospitable conditions for sustainability, and b) that these conditions amount to cultural structural barriers to sustainability. Profit-driven extrinsic values and the stakes involved in many projects appear to allow limited scope for practitioners to engage disinclined stakeholders' intrinsic values considered more aligned with pro-environmental behaviour and support for sustainability previously demonstrated in literature.

DISCUSSION OF FINDINGS AND CONCLUSION

Decision influence processes seemed to begin during pre-engagement interactions between client and practitioner, even before an appointment was made. Beyond baseline legal regulations, the advancement of sustainability via decision processes appeared to be influenced by values and frames among this participant group. Through the practices of communicating with clients, practitioners appeared to

implicitly and explicitly elicit value statements from them and use these as heuristics and indicators to guide how to interact with them on sustainability issues, and how far and how hard to press. Intuitive judgements and cultural stereotypes of client personality and 'positioning' served as proxies for personality assessments and provide practitioners with heuristics with which to select appropriate methods and tactics for client sustainability engagement. In addition to values, practitioner awareness, experience, and knowledge, the heuristics of judgements, stereotypes, and personality assessments informed their choice of frames. These heuristics were used as shorthand interpretation mechanisms to influence sustainable design decision processes. They provided an interpretation method with which practitioners evaluated, and then promoted or relegated, options for engaging clients with certain frames of reference, or certain approaches to sustainability, i.e. commercial frames, energy-savings, ethical responsibility, etc. These different frames, and the values that influence them and their selection, appeared to be activated or employed either in combination or separately at different times. This occurred both intuitively and consciously in: a) implicit psychosocial interpretative and analytical mechanisms developed over time and b) explicit engagement processes.

Values engagement, elicitation of values statements, and use of interpretative mechanisms happened at an almost sub-conscious level and appeared to have gone unrecognised by the practitioners as a result. Whilst such implicit, intuitive judgements can be dangerous in the formation of false impressions and erroneous analyses, their heuristics seem to have proven useful for these experienced practitioners. However, such intangible but critically important constructs seem entirely underutilised as a resource with which to enhance performance in briefing and design for sustainable construction.

This research phase has captured certain values-influence processes, illuminating key, underlying sub-processes in sustainability decision-making, providing new insight into the conditions in which framing, values, and values engagement are relevant and useful, but under-appreciated. Responses have brought to light the subtle, nuanced, and highly individuated ways in which different practitioners approach stakeholders with sustainability issues. Given the complexity of influences, heuristics, and interrelationships, future work on this project will respond to the need to triangulate findings through further data from additional interviews, group values elicitations, and individual values surveys with design practitioners, clients, and project teams. Future work will also examine relationships in a terminal and instrumental values framework and relate them more directly to values, problem framing, and sustainability research in other fields.

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Psychosocial influences in design for sustainability: values and frames in the built environment

Richard P. Kulczak[1], Poorang A.E. Piroozfar[2], and Marie K. Harder[3]

Abstract

Design as a human endeavour is inherently imbued with social implications and outcomes. In the built environment good design is a proven mechanism for positive change on many levels. Despite the positive benefits of good built environment design, research indicates that cities continue to contribute 70% of global CO_2 emissions and 75% of energy consumption—many new projects achieve only minimum standards despite decades of research, policy, and practice initiatives in sustainable building design. This comes at the expense of longer-term environmental, social, and economic impacts in favour of shorter-term outcomes and profits. A more holistically-informed approach is required to address the inextricably interrelated large-scale issues of urbanization, population, planetary limits, and global environmental change. Micro-scale human interactions and influences in design decision-making processes can be leveraged consistently toward a new and more thoroughly humanised approach to sustainability at macro-scales. Pivotally important but previously neglected opportunities for improving sustainability outcomes reside in a combination of values-based stakeholder engagement and problem framing to inform and advance design for sustainability in the built environment. New research has begun to expose subtle but powerful, overlooked, and critically important fundamental psychosocial influences affecting design decision processes.

This paper examines how lessons learnt from recent stakeholder interviews and values workshops translate affective human interactions in early design processes into sustainable, and unsustainable, outcomes in the built environment. Through critical interpretive synthesis of an extensive literature review, key informant interviews, and values workshops, the regard—or disregard—for larger scale phenomena and impacts are shown to be visible and accessible in these fundamental social psychological processes.

Data analysis has revealed complex psychosocial influences, heuristics, and interactions relating design practitioners and key decision-makers to design outcomes. Results provide support for a reciprocal link between communication frames, human values, and decision-making outcomes with both positive and negative wider impacts. Emphasis is made on the new, subtle and nuanced influences found between human values and communication frames—particularly the ways in which the problem of sustainability is framed and progressed more or less successfully through stakeholder interactions and dialogues—and the implications these influences suggest in sustainability outcomes and long-term built environment impacts. Most importantly, the roles of affective human interactions justify the need for change in existing practice and demand modifications to the existing understanding of sustainability that account for inter- and intra-personal psychosocial variables. New connections to literatures in organisational behaviour, design management, cross-cultural psychology, communication theory, and sustainability science are identified. Further work is planned to triangulate findings through new data gathered from participant observations, additional interviews, and values elicitations with clients, project teams, and design practitioners.

Keywords

Sustainability, design, built environment, values, frames, psychosocial influences

[1] Corresponding author; Values and Sustainability Research Group, and Built Environment Research Group, School of Environment and Technology, University of Brighton, BN2 4GJ, UK

[2] Built Environment Research Group, School of Environment and Technology, University of Brighton, BN2 4GJ, UK [3] China National Thousand Talents Professor, Fudan University, Shanghai, China; and Values and Sustainability Research Group, University of Brighton, BN2 4GJ, UK

Foundations of Stakeholder Behaviour in Sustainable Building Design Decision Processes: Conceptual Relationships of Two Key Variables

Field: Stakeholder Behavior in Urban Development

Keywords: building design, decision processes, social psychology, stakeholder behaviour, sustainability, theoretical scaffolding

Authors: Richard P. Kulczak[1], Dr. Poorang A.E. Piroozfar[1], Prof. Dr. Marie K. Harder[1,2]

Affiliations: [1]University of Brighton; School of Environment and Technology, Cockcroft Bldg., Lewes Road BN2 4GJ Brighton
United Kingdom
[2]Fudan University, Shanghai, PRC

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Analysing conversations towards sustainability decisions; an approach using a values-and-frames lens

--Manuscript Draft--

Manuscript Number:	[redacted]
Article Type:	Full Length Article
Section/Category:	Regular Issue
Keywords:	Decision Analysis; Sustainability; Human Values; Framing Analysis; Communication Assessment Tool
Corresponding Author:	MARIE HARDER UNITED KINGDOM
First Author:	Richard P. Kulczak
Order of Authors:	Richard P. Kulczak
	Poorang A.E. Piroozfar
	MARIE HARDER
Abstract:	This paper presents an approach to analyse conversations between architects and their clients, in terms of the main values and frames involved in decision process in design sustainability solutions. We show the need for such analysis of information, because these types of conversations dominate final outcomes of (non-)sustainability in the built environment, and more sustainability-biased solutions requires special space for 'meaningful choices' linked to the stakeholder values. As a theoretical framework and analytical lens, human values are overlaid on communication frames as both representations and sources of meaning. From a set of grounded thematically-coded interviews, a case-based exemplar map of values-influence pathways was developed by serialising sequences of architects' framed choice options and clients' consequent decisions. This then allowed pathways of how values and frames influenced each other to be tracked. It was found that meaningful choices were made and spent when frames met values with varying compatibility: the approach will allow further studies to systematically map these empirically. This approach can now be applied to different scenarios concerning long-term project impacts associated with sustainability, and to develop both best practice and underpinning theories. The general applicability of the approach provides foundations for development into an approach that can be systematised for computer analysis of information in values-framed conversations.

[redacted]

[redacted]

Managing sustainability through decision opportunities: exploring 'values-and-frames' in meaningful choice spaces

Journal:	[redacted]
Manuscript ID	[redacted]
Manuscript Type:	Original Article
Keywords:	Communication, Decision analysis, Sustainability, Decision making, Architectural management
Keywords (user-entered):	Frames, Meaningful choice, Influence, Human values

[redacted]

[redacted]

[Contents page as review aid]

Managing sustainability through decision opportunities: exploring 'values-and-frames' in spaces for meaningful choice

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