

Governance of Systems of Social Practice for Sustainability: Developing a reflexive systems of practice approach for governance of sustainability

**A thesis submitted to the School of Environmental Sciences of the
University of East Anglia in partial fulfilment of the requirements for the
degree of Doctor of Philosophy**

By James Graham

October 2018

© This copy of the thesis has been supplied on condition that anyone who consults it is understood to recognize that its copyright rests with the author and that no quotation from the thesis, nor any information derived therefrom, may be published without the author's prior, written consent.

For Annabelle and Hugo

Abstract

It is widely recognised that meeting current emissions reduction targets will require radical changes to the sustainability performance of the built environment. Dominant approaches to sustainable building rest upon technological innovation, regulation and behavioural change initiatives. These represent a centralised command and control approach to governance. This thesis contributes to existing literature which contends that these approaches are inadequate because they fail to recognise the simultaneously socio-technical nature of systems, thus focusing on narrow interventions aimed at isolated aspects of dynamic systems. Instead, the thesis develops and applies a novel conceptual approach to explore the reflexive governance of systems of social practice.

The thesis draws on new empirical data from a multi-site in depth qualitative study of the system of practice that emerged around a sustainable building project at the University of East Anglia. This involved 58 interviews with key actors and residents, 12 months participant observation and documentary analysis conducted during the construction process and first months of occupancy.

Key novelty of the thesis is found in producing a map of a “live” system of practice. The mapping process enabled the identification of the multiple and diverse relations between practices through which governance occurs, and an exploration of numerous overlapping forms of governance happening at different points in the system. Sustainability is identified as a situated element of practice, taking different forms at different points in the system. The thesis concludes by drawing out implications for governing systems of practice for sustainability. It outlines an idealised system of governance based on principles of: i) systematic mapping of connections within systems of practice to understand both current context and likely outcomes; ii) anticipatory policy visioning; iii) co-design of interventions with key practitioners; and iv) developing distributed reflexivity across whole systems of practice to better attend to multiple forms of sustainability.

Table of Contents		Pages
Abstract		i
Contents		ii
Figures		vi
Tables		vii
Acronyms		viii
Glossary		ix
Acknowledgements		xi
Chapter 1	Pathways into Peril	1
1.1	The Crisis of Governance	1
1.2	Towards a New Approach to Governance	5
1.3	Contributions of the thesis	9
1.4	Thesis Outline	11
Chapter 2	Approaching Systems of Practice	15
2.1	Current approaches to sustainability of the built environment	16
2.2	Social Practice Theory	23
2.2.1	Systems of Practice	28
2.2.2	Intervening in Practice	32
2.3	Introducing Reflexive Governance	37
2.4	Towards a conceptual framework for reflexive governance of practice	45
2.5	Research Questions	48
Chapter 3	Exploring Systems of Practice	50
3.1	Rationale: Towards a case study of a system of practice	50
3.2	Finding and Introducing the Case Study	54
3.2.1	Identifying a Suitable Case Study	54
3.2.2	Introducing the Case: The Blackdale System	58
3.3	Mapping and Exploring the Blackdale System of Practice	63
3.3.1	Phase 1: Defining and Bounding the Case	64
3.3.2	Phase 2: Populating the System with Practices	65
3.3.3	Phase 3: The Lived Experience	66
3.3.4	Phase 4: Focusing on Sustainability	66
3.3.5	Summary: Mapping Systems of Practice	67

3.4	Methods	71
3.4.1	Semi-Structured Interviews	71
3.4.2	Participant Observation	76
3.5	Analysis and Write-up	81
3.5.1	Analysing All the Time	81
3.5.2	Coding	83
3.5.3	Writing Up	84
3.6	Research Ethics	85
3.6.1	Ethics of Semi-Structured Interviews	86
3.6.2	Ethics of Participant Observation	87
3.6.3	Ethics of Writing up and Representing the Case	88
Chapter 4	The Blackdale System	90
4.1	Practices of Governance	94
4.1.1	UEA Policy	96
4.1.2	Local Policy	101
4.1.3	National Policy	104
4.2	Practices of Construction	109
4.2.1	Design Practice	111
4.2.2	Construction Practice	114
4.2.3	Project management	116
4.2.4	Professional bodies	119
4.2.5	Learning practices	121
4.2.6	Relationship management	124
4.3	Practices of Habitation	128
4.3.1	Managing practices	130
4.3.2	Resident practices	134
4.4	Conclusion	141

Chapter 5	Sites of Governance	146
5.1	Cases in context of the Blackdale System of Practice	147
5.1.1	Practices of Governance	150
5.2	Decision-making practice	151
5.2.1	Project Board meeting	152
5.2.2	The Project Board Meeting as a Practice	156
5.2.3	Practice Connections with Project Board meeting	159
5.3	Design Practice	162
5.3.1	Diary of a Designer	164
5.3.2	The Practice of Design	169
5.3.3	Constituting the Design Project	171
5.4	Cooking Practice	175
5.4.1	Kitchen Conversation	177
5.4.2	Residents' Cooking Practice	179
5.4.3	Governance relationships of resident cooking practice	182
5.5	Summary: Connecting Sites of Governance	187
5.6	Conclusion	190
Chapter 6	Governance for Sustainability	193
6.1	Performances of Sustainability	196
6.1.1	Elements of the Project Board Meeting	200
6.1.2	Elements of Design Practice	202
6.1.3	Elements of Residents' Cooking Practice	205
6.1.4	Sustainability across the three cases	209
6.2	Reflexive governance implications for sustainable practice	212
6.2.1	First Order Reflexivity in the Blackdale System	214
6.2.1.1	Ongoing Learning Projects	215
6.2.1.2	Focus on Relationship Management	218
6.2.1.3	Production of Framework and Design Guide	220
6.2.2	Second Order Reflexivity in the Blackdale System	222
6.3	Reflexive Systems of Practice for Sustainability	227
6.3.1	Practice Mapping	228
6.3.2	Anticipatory Visioning	230
6.3.3	Co-Design	231
6.3.4	Distributed Reflexivity	234
6.4	Conclusion	238

Chapter 7	Towards Reflexive Governance of Systems	241
7.1	Answering the Research Questions	243
7.2	Thesis Contributions	250
7.2.1	Empirical Contribution	250
7.2.2	Methodological Contribution	252
7.2.3	Theoretical Contribution	253
7.3	Implications: A new research agenda for Sustainable Governance	255
Appendix 1:	Full Blackdale System of Practice Map	262
Appendix 2:	Sample Interview Protocol	263
Appendix 3:	Sample Transcript	269
Appendix 4:	Sample Field Diary	286
Appendix 5:	Fieldwork Codes	289
Appendix 6:	Standard Consent Form	292
Appendix 7:	UEA 2016 Contractor Framework KPIs	293
Appendix 8:	BREEAM Certification	295
Appendix 9:	Schatzki and Macrorie Practice Relations	297
Bibliography		299

List of Figures		Pages
Figure 2.1	Social Practice model adapted from Shove et al. (2012 p29)	24
Figure 2.2	Initial conceptual framework for reflexive governance of practice. A governing practice and a governed practice exist within a cyclical learning relationship where they each react to each other.	46
Figure 2.3	Expanded conceptual framework for reflexive governance systems of practice, making a distinction between practices of governance and governing practices.	47
Figure 3.1	Three Grade II listed landmarks of the UEA campus. Left the Sainsbury Centre for Visual Arts. Centre, The Lasdun Teaching Wall. Right, Norfolk Terrace Ziggurat Halls of Residence	59
Figure 3.2	Architectural design image made LSI Architects. Left, Barton House, Central building and Right Hickling House	62
Figure 3.3	Paired representation of the Blackdale system as represented by the initial actor centric network map and the final system of practice map (Appendix 1).	70
Figure 4.1	Conceptual framework based on initial conceptual framework constructed in section 2.4. Practices are grouped into grey projects and into coloured sections based on the broadly defined groupings of practice encountered during fieldwork.	91
Figure 4.2	Practices of Governance map section, represented by the red band, isolating the Practices of Governance present within the Blackdale system	94
Figure 4.3	Practices of Construction map green band, indicating the Practices of Construction section of the Blackdale system map	109
Figure 4.4	Practices of Habitation map blue band, indicating the Practices of Habitation section of the Blackdale system map	128
Figure 4.5	Full system map highlighting three bands of projects comprising the Blackdale system and the interactions between them.	136
Figure 5.1	Full system map highlighting three bands of projects involved in the Blackdale system and the interactions between them.	147
Figure 5.2	The beginnings of the Blackdale development represented as a series of coalescing factors being collects and made into the impetus for the new buildings.	156
Figure 5.3	The design process represented as taking and initial brief, generated by UEA policy and recruiting professional practices to realise the design. Once recruited by project administration the practices involved are alloyed into a final artefact which then drives construction.	169
Figure 5.4	Practices within the finished residences are informed by those that created the structures they inhabit. Other significant factors also drive from outside the system, demanding time and providing practice elements. The Student Experience is sourced from here, taking elements of the lived experience and using it then to drive policy (Figure 5.5).	179
Figure 5.5	The combined case studies, drawing a line between then and demonstrating how one affects the next as well as how Student Experience is taken to drive and inform the next iteration.	187
Figure 6.1	Adapted from Cato (2012): the 'Pillars of Sustainability', each nested within the last, indicates the interconnected nature of aspects of sustainability that could otherwise be defined as separate.	194

List of Tables

		Pages
Table 2.1	MINDSPACE elements adapted from Dolan et al. (2014)	20
Table 2.2	Adapted from Gram-Hansson (2010 p154) and indicating the range of different elements of practice suggested by contributing scholars	23
Table 2.3	Interventions in practice taken from Spurling et al. (2013 p5)	34
Table 2.4	Rhodes' (1997) extrapolated scenarios representing different modes of governance	39
Table 2.5	Dryzek's (2013) models of governing for sustainability	41
Table 3.1	Types of case study, taken from Flyvbjerg (2006)	54
Table 3.2	Recent history of the UEA built environment	60
Table 3.3	Interviews undertaken as part of Blackdale fieldwork	74
Table 3.4	Variations in interview protocols as well as numbers of resulting interviews (Appendix 2)	75
Table 5.1	Key practice relations present within the three of the cases for Chapter five. Definitions drawn from Schatzki (2015) and Macrorie (2016) and found in Appendix 9	189
Table 6.1	Performances of sustainability present in the Chapter five vignettes, grouped into the three pillars of sustainability with the addition of status quo representing the sustaining of unsustainable practice as part of everyday life. The columns represent which element of practice the performance is concerned with: each corresponding to Artefacts (A), Images (I) and Skills (S).	199

Acronyms

BIM: Building information management

BRAC: Building Regulations Advisory committee

BSRIA: Building Services Research and Information Association

CABE: Chartered Association of Building Engineers

CCS: Crown Commercial Service (Procurement regulations)

CIBSE: Chartered Institute of Building Services Engineers

CIOB: Chartered Institute of Builders

DCLG: Department for Communities and Local government

H&S: Health and Safety

HMG: Her Majesty's Government

MEP: Mechanical, Electrical and Plumbing (Services)

MICE: (Member of) Institute for Civil Engineers

OH&P: Overheads and Profits

RIBA: Royal Institute of British Architects

RICS: Royal Institute of Chartered Surveyors

SL: Soft Landings

Glossary

Behaviour: Observable activity of an individual in response to internal or external stimuli

Design and Build: Current standard for construction contracts. The artefact of the design is partially created by the client and then passed from the client to the contractor who is then responsible to actualising it. The part-finished design gives a certain amount of autonomy by the contractor to increase profit margins through more efficient use of finances and materials during the construction process.

Endogenous Governance: Governance performed under the assumption of being part of the system being governed with a limited, subjective view

Eternal triangle: The balance of Cost/Quality/Time throughout the project. The Eternal triangle is a key meaning within the governance this system of practice

Exogenous Governance: Governance performed under the illusion that the governor is separate from the system being governed, often with a tacit assumption of a strategic view of the system being available to governors where its entirety is observable

Feedback: The signal from a governed practice to a governing practice as a result of an interaction to any other practice that in turn affects the governing practice

Governance: The application of an intervention by an entity be it a person, organisation, system or practice

Governing practices: Practices identified as governing because they, in their performance, cause changes in other practices or relationships between practices. They are defined as governing practices from the point of view of the practice being governed

Government: Referring to interventions instigated by a specific executive body

Governor: The source or site of an intervention in practice. Not specifically required to be an individual but can be any source of intervention.

Interaction: Contact between practices causing an alteration in the state of one or both. Materially similar to interventions in practice but without the need for intentional governance

Intervention: Interaction from one practice to another, or practice group be it through contact with an individual, a body, network or system of practice which has, contained within it, the intention to influence another practice. Defined as element curation, practice curation and practice coordination

ISO4001: The international standard that specifies requirements for an effective environmental management system (EMS). It provides a framework that an organization can follow, rather than establishing environmental performance requirements

Policy Practice: Practices of Governance with the intention to govern widely but not specifically targeting any aspect of the system in question in particular (Intended to govern entity, rather than performance)

Post-occupation: Period after construction when a building remains under scrutiny. Often referring to surveys given to residents to assess its performance relative to specifications

Practice as entity: The sum total of elements engaged in a practice within a given timespace

Practice as performance: Any single iteration of a practice as carried by a practitioner at a particular time

Practice: Activities performed as part of everyday life identified through specific components such as skills, images and artefacts

Practices of Governance: Practices carrying within them the intention to govern or apply interventions to other practices or the interactions between practices with a specific goal in mind

Professional Practice: Practices performed by professional practitioners that, in performance or in outcome, govern but without the explicit intention to do so.

Project: A group of practices unified by a shared intentionality or particular objective

Proto-Practice: Theoretical future practice based on an assumed time-space being constructed for that practice to occupy

Student Experience: Proto-practice generated through interactions between students and the University that has become a guiding priority within university policy. Distinct from student practices of everyday life and Practices of Habitation

System: A collection of components connected in relation to a particular function

System of practice: A relatively stable configuration of linked practices and relations organised around a particular function

Timespace: The spatio-temporal context through which a practice is carried. Timespace can be shaped by practices and in term effect the elements and arrangements of practices that take place within it. Governing practices are often in fact configuring the structure of timespace leaving practices to be carried within altered as a result. Timespace is used as part of this work, in order to allow the discussion of practice interactions as distinct from more material understanding of physically constructed spaces manifested within the case study.

Acknowledgements

The last four years have been some of my very best, it is not an exaggeration when I tell everyone I meet that this is the “Best job I ever had”. For that, more than anyone I have to thank my supervisors Tom Hargreaves and Jason Chilvers. Not just for welcoming me to UEA in the first place but for guidance, pushing, chasing and the occasional grudging kick when needed. Both have been very supportive from lending me interesting books to looking out for my health and wellbeing. This is all the more commendable considering some of my own eccentric working practices ranging from leg weights to a long war against sleep that caused me to be essentially nocturnal while writing up. Ever critical, but rarely unfair, and always constructive, I’d go into meetings so stressed I felt sick and come out with a plan and a smile. To say they taught me a lot feels like a platitude but in truth their influence has been huge. In all honesty I did not know what Social Practice Theory was before I arrived and now it’s all I talk about, but beyond that, both Tom and Jason are both fantastic examples of what an academic should be from award winning teaching to trail blazing academic work I would be proud to be half as good.

Thanks also have to go to Matt Watson and Helen Pallet for not only agreeing to be examiners but for help and support along the way. Both for valuable advice during my upgrade years ago to providing a friendly face and valuable insights whenever I ventured out into the wider academic world. I have tried to live up to that example.

I have the privilege of being part of, or engaged with some great academic communities. Firstly 3S, who took me in to begin with, particularly Noel Longhurst, Gill Seyfang and Rosalind Bark who have not only been unflinchingly supportive but also electrifying examples of innovation in both teaching and academics. The Tyndall Centre who provided not only, it would seem, most of my peer group but some truly inspiring and approachable examples of real life world-saving rock stars in Corinne Le Quéré and Asher Minns. Finally some thanks go to the DEMAND Centre for most of my reading list, and by extension the basis of my thesis as well as conferences and summer schools that felt like ‘coming home’ to the only place in the world I didn’t have to explain what Social Practice Theory was to anyone.

On the subject of world-saving institutions, UEA and its famous ENV department made all of this possible, providing a venue, support, a case study and of course

funding to complete this great task of mine. The university and my time in Norwich have taught me a great deal about life, teaching and learning that I won't forget. I'd also like to thank my many many interviewees from brand new students in Hickling and Barton to a Deputy Dean and the Head of Estates. Specifically, the Estates Division were invaluable and in particular, thanks must go to Martin Lovatt. In purely practical terms, I owe Martin my fieldwork. From the word go, I knew I was on to a good one, someone who really got it, and was prepared to share it without me having to ask. A fascinating man in his own right he cheerfully granted me everything I asked and introduced me to the Blackdale development and the people within. His value cannot be overstated, from many hours of interviews to 'quick' meetings here and there to clarify points and test out my ideas against their real life counterparts.

On the theme of vital people, my unending thanks and admiration go to Catrin Darsley. To say that I wouldn't have been able to do this without her would be a colossal understatement. She took on what I had to say right from arrival along with introducing me to both the Green Flats and Martin. Since then, Catrin has provided nothing but relentless and enthusiastic support in the form of messages, cards, date nights, food and patience not to mention lending her not inconsiderable language skills to a mammoth proof read at short notice. There aren't words to describe my gratitude.

I considered it a small failing of my time at UEA that I haven't made many friends among my cohort, made all the more regrettable by the ones I have made being so brilliant. To Phedeas Stephanides, Brendan Moore, Adam Kennerley and Ellin Lede I can only give thanks for the advice, companionship and aspirational examples of what a PGR should be that have been invaluable to follow.

That isn't to say there have been no other relationships and I would like to briefly thank the various other little families that I've found since arriving for making me go outside every so often as well as keeping me fit, healthy and sane. To the Druids, for keeping me grounded in reality and for victory. To Cordao De Ouro for helping me embrace a more light hearted approach to problems. To KDS Norwich for making me work hard, and trusting me to teach kids. To the Titans for working hard and letting me sharpen those teaching skills. Finally to CHAIN for giving me a first taste of what real activism feels like, for some invaluable local contacts and the sense of doing

something useful during months where all I seemed to do was read and at the end when climbing Mt. Thesis.

It might be a footnote, but thanks should also go to Sharon George, Collette Card and Joanna Wright. They will most likely never read this, but deserve a mention regardless. They got me through my MSc, pushing me to massively exceed my own expectations and probably won me my place at UEA. Particular thanks go to Sharon for telling me to actually go look at FindaPhD.com. I can honestly say I have no idea what my life would have been like without them.

What I do know, is that throughout all my decade of higher education I have enjoyed the unwavering foundation of my parents Sue and Malcolm. Despite not always understanding my decisions and generally not knowing what I do day to day they have always been there with care packages and advice whenever they were needed, and sometimes unlooked for. Finally, thanks go to my sister Sarah who, in addition to all of the above has recently given me an even better reason to do what I do than the impending end of the world. My niece and nephew will be my age in 2050.

Chapter 1: Pathways into Peril

1.1 The Crisis of Governance

The world stands in peril. Without a rapid change of course, humanity is heading towards multiple existential crises (Taylor et al. 2016, Kareiva & Carranza 2018). Over the next few decades we face looming environmental collapse (Hillebrand et al. 2018, Song 2018, Taylor et al. 2018, Ullah 2018), rapidly rising consumption (Wackernagel & Rees 1998), compounded by a rising population (Rosling 2010) and poor resource management (Alexander 2017, Halada 2008, Handwerk 2010). Any one of these could potentially cause catastrophic damage to a global system that has all but completely failed to address them and in many cases is continuing to promote entirely environmentally unsustainable practice (Holdren & Ehrlich 1974, Norman & Steffen 2018).

It is no longer an exaggeration to say that, as a global entity, humankind stands on the brink of apocalypse. By any definition, the Earth is about to transition into an uncharted epoch and it is still unclear what the Anthropocene will mean for us. What even a few years ago would seem like hyperbole is thrown into sharp relief by recent reports of the United Nations announcing that there are less than two years left to transition entirely from fossil fuels (AP 2018), and Steffen et al. (2018) stating that the 'Hothouse Earth' may already be all but inevitable given current emissions trajectories and anticipated feedback loops. These bold statements are not intended to induce despair, but to underpin just how vital the need for rapid and radical change is. In addition, there is a need for a little introspection into not only why the well-established sustainability agenda (UNCED 1992) has had so little impact but whether or not more fundamental questions need to be asked about the nature of our collective approach to saving ourselves.

The potential of carbon dioxide to cause problems has been understood for over a century (Arrhenius 1895) and has been almost unanimously agreed to be a source of civilizational jeopardy for decades (UNCED 1992, CTI 2011) resulting in a number of significant international efforts to curb emissions, including the Kyoto Protocol in

1997 and the Paris Agreement in 2015. The United Nations Framework Convention on Climate Change states that its objective is to “stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system” (UNFCCC 1992) but, despite yearly summits globally, warming remains on course for a three- to four-degree rise in temperature by 2100 (Collins et al. 2013). There has been sufficient information to act on for decades, and a stated intention to do so, but extremely limited progress.

That is not to say that there has been no progress. Brundtland et al. (1987) ushered in the sustainable development agenda and there has been a great deal of development. Globally, poverty and hunger are lower now than they have been previously (Rosling 2010). Technology and computing becomes more energy efficient with each generation and renewable energy sources are beginning to challenge fossil fuels on a world stage (Goh et al. 2018). For all this, however, progress towards a sustainable future, whatever that might mean, is too slow. Global carbon emissions peaked very briefly in 2015 but are now rising again (Quéré 2017). Jevons Paradox states that increases in efficiency, far from reducing resource use, actually cause it to increase (Alcott 2012) and this goes some way towards explaining patterns of increased carbon. Järvensivu (2018) has suggested that efforts towards sustainability are likely to either bring about the collapse of the current capitalist paradigm or, presumably, fail since development is still being driven by fossil technologies and unsustainable forms of consumption.

Sustainability, as a goal, and certainly as a global one, may simply be too nebulous a concept to meaningfully grasp; the more tightly it is defined the more possible expressions of it fall by the wayside, leading to either falling short or actively hampering efforts (Walker & Shove 2007). While this issue is addressed later in the thesis (6.1), it is smaller facet of the larger challenge. Discussion of exactly what sustainability means might be a worthy topic for study but the specific metrics do not matter when none of them are being met in a meaningful way (Norman & Steffen 2018, Steffen et al. 2018, Tanaka & O’Neil 2018). For example, the Paris Agreement was hailed as a historic success; it represented the best example so far of international cooperation towards addressing climate change. However it was

labelled a 'fraud' by scientists because even the aspirational commitments made leading up to it do not represent a sustainable world (Milman 2015).

It is largely understood that we have the requisite knowledge and technical expertise to affect change or even mitigate climate change (Anderson & Bows 2011). What is lacking is the implementation or the forward planning needed to meet the goals that have been set both empirically and politically through the Carbon Budget (CTI 2011), the Paris goals, or, in the United Kingdom, the Climate Change Act (2008). Dominant approaches to mitigation are technological, focusing on supply-side interventions like renewable energy, nuclear technology, electrification of transport in order to decarbonise current modes of practice. Even these are increasingly being supplemented by plans for carbon negative technologies in the future (Eisenberger et al. 2009).

Supplementing the supply-side, in an attempt to lower demand-side consumption is a suite of behavioural interventions. These are based on employing behavioural economics to influence consumer action through information provision, economic incentives like feed in tariffs and the Green Deal (Hamilton et al. 2013), and mass dissemination of smart meters to encourage uptake of new technology and the lowering of energy use (Naus et al. 2014, Hargreaves et al. 2018). These approaches are often ineffective, either in terms of initial impact or in the long term. Dobson (2009) notes the speed with which financial incentives can work but that they require constant reinforcement and can be counterproductive. Dilley (2012) found that there was enthusiasm at the highest levels of government but that interventions need more careful design and management if their intended effects are to be actualised. The separation of social and technical approaches is something that this thesis aims to address by applying Social Practice Theory (SPT) to enable a truly socio-technical view of intervention rather than attempting to 'join up' two separate types of intervention after the fact (Menezes et al. 2012).

Having established that there are tools available to at least move towards a sustainable way of life and that policies exist to facilitate that process, the lack of progress suggests that the tools at our disposal and our understandings of how they relate to social life are clearly not fit for purpose. However, it would seem that such

profound failure cannot simply be the result of incorrect tools, poorly executed policy or vested interests but that, at a more fundamental level, we do not understand how to achieve a sustainable future. It is the contention of this thesis that the socio-technical context of social life is not fully accepted by those meaning to govern and nor is their role in governing it fully appreciated for how it manifests within that context and that that separation leads to a permanent disconnect between intention and outcome. This may not be due to any malice or a lack of competence in governing. Any actor would struggle to navigate an environment that they do not recognise and are not fully equipped to interact with.

This work presents a new viewpoint on governing relationships within SPT and how these interactions pertain to sustainability as well as proposing a methodology for analysis of these relations. It is hoped that this convergence and synthesis will allow some of the failings of the currently dominant paradigms to be addressed. Utilising a systems of practice approach, which combines the social and the technical, it allows governance to be considered in the way that it interacts with both rather than utilising either as single entities. By situating governance within a system of practice it opens up new ways to think about intervention in systems.

What we see here, is a crisis of governance. The tools on both the demand and supply sides have been in our hands for decades and they have been implemented without meaningful deviation from our trajectory towards, for example, exceeding the carbon budget (Quéré 2017). It is time for a new approach. The problem of sustainability, while wicked in its own right (Levin et al. 2012), is not insoluble. There are targets to be met, such as carbon neutrality and a circular economy, and there are acknowledged trajectories to achieve those states. The lack of progress towards them suggests that something is missing. It is all too easy to blame the current situation on inept or corrupt policy making since we do not understand how we seem to have chosen this place on the edge of doom. Given that no rational actor would choose to be in this situation, it seems, at this point, unlikely that we will escape without some radical shift in how we approach the problem. Current approaches to governance use a model of social life based on rational cognition and technological innovation that leaves out important aspects and connections. It seems that the crisis of governance is not borne of failure to deploy appropriate measures so much as that deployment

taking place within a socio-technical context that is not acknowledged or fully engaged with. The following section lays out a pathway to governance that acknowledges that context and thus might hope to govern more effectively.

1.2 Towards a New Approach to Governance

Having presented a rather damning indictment of the current governance paradigm in the previous section now is the time to present an alternative. The main challenges presented here are to the predominance of techno/behavioural interventions (Watson 2017) and the positioning of governors within systems (Rip 2006, Shove & Walker 2008). As stated above, it is the misunderstanding of socio-technical context that can lead to governance falling short of its potential. The first indication of this is the assumption inherent in much governance literature of governing being a separate entity from the systems being governed (Rhodes 1997, Dryzek 2013). Such separation theoretically comes with a strategic overview of the system and the ability to know all of it before choosing an intervention but leads to unforeseen consequences much too often for this to be an accurate understanding of what is taking place (Voß et al. 2006).

That misunderstanding is highlighted by disconnects between the intentions of governors to; for example, reduce resource use and the outcomes of a given intervention. In terms of technological interventions this manifests as the 'performance gap' (Vassallo et al. 2018), where technologies are domesticated by users and not utilised to specification. In behavioural terms it manifests as the 'value-action' gap, described by Barr (2006) as a sharp disconnect between the cognition of individuals and subsequent actions taken. The two gaps denote systemic disconnects between the expected function of interventions and their outcomes. That the techno/behavioural paradigm remains dominant represents, at best, an inefficiency within systems of governance for sustainability which will continue to hamper efforts and at worst a fundamental misconception of those systems. This thesis presents an entirely different ontology (Schatzki 2016) in order to illuminate social life and its governing relations so as to hopefully close the gaps and more realistically and efficiently connect input with outcome.

Social Practice Theory provides the basis of the new approach taken by this thesis to address the relationship between governance and social life. It combines the social and the technical by taking as its basic unit practices that encapsulate skills, artefacts and meanings, combining relations between technology and behaviour. This confluence of the social and the technical immediately addresses the gaps highlighted in the previous paradigm and, because SPT focuses on the construction of doing, it need not be overly concerned with addressing cognition, whatever effect it has is also encapsulated in the output, the practice (Nicolini 2012). SPT “provides a more holistic and grounded perspective on behaviour change processes as they occur in situ” (Hargreaves 2011, p79) very much because it operates at a level of irreducible interconnectivity and thus takes into account more of the context in which an action is taken than simply assuming a rational actor. Nullifying the notion that systems are made up of interactions between rational actors is a key contribution of SPT (Reckwitz 2002, Shove 2014). SPT provides a different approach to understanding social life but, so far, lacks a strong contribution to thinking on governance (Hampton 2018).

Because SPT has previously been largely concerned with either single practice or the connections and relationships between small groups of practices it has not had to interrogate its relationship with notions of intentional governance. This is partly because some consider practices to be ungovernable (Shove 2014) and partly because it is understood that practices relate to and change each other regardless of the intention to do so. Until recently SPT has focused on how practices form, change and interact (Shove et al. 2012) rather than how they intentionally govern or how they might be guided, partly as a way to distinguish the theory from behavioural approaches (Shove 2011). Another important way in which SPT distinguishes itself is its ability to address large social arrangements rather than large numbers of individuals (Shove 2010). Decision-making of the individual, while not discounted entirely, is decentralised by SPT leading to a distributed concept of agency within practice thinking and as a result a lack of thinking around or perhaps credit given to intentional governance as a means of affecting change.

It follows from this that if social life is made up of practices then governance is either a practice in itself (Shove 2014, Hampton 2018) or emergent from relations between practice (Schatzki 2015). A greater understanding of this principle is a key contribution of this thesis, as until recently SPT has questioned whether practices are governable at all. As part of this debate Shove (2015) notes that to govern practices might require the surrender of an understanding of agency by governors. Thankfully there is a candidate within governance discourse that proposes that same concept: Reflexive Governance (Rip 2006). Reflexive governance proposes a much closer relationship between the governor and the governed, with governance taking place through a cycle of visioning, implementation, feedback and learning (Sendzimir et al. 2006). The understanding that the governor is not apart from the system ties in well with current SPT thinking and forms the basis of the new approach being suggested in this thesis.

Having applied a practice lens to governance there are new means to intervene in practice as well as more available options for what qualifies as an intervention (Spurling et al. 2013). With the more contextualised understanding of social life it is easier to see the effects of an intervention and offer insights into which approaches to governance work well and what needs to change (Butler et al. 2018). Such insight encourages, or creates, a more reflexive understanding of governance; specifically, encouraging the positioning of the governor within a system of practice rather than extrinsic from it and engaged in an ongoing process of intervention and feedback resulting in the steering of practices. This practice-based understanding of the elements of governance leads to an ability to identify and observe the practices of governance, which carry some or all of those elements.

Placing governance into systems of practice not only gives an opportunity to, but necessarily involves, looking at larger more complex groups of practices than SPT has previously been concerned with. These kinds of systems have been proposed before but only in the abstract or as “large social phenomena” rather than systems (Watson 2012, Schatzki 2011) or on a relatively small scale, addressing governance only in terms of interactions between practices (Schatzki 2002, Macrorie 2016). Thus far such a system of practice approach has never been operationalised in terms of empirically studying a system ‘in the wild’. The effort to do so within this work

represents an important contribution and the core of the methodological and empirical work of this thesis.

Because it is breaking new ground, the empirical work for the thesis takes the form of a paradigmatic case study (Flyvbjerg 2006). The case study is a system of practice based at the University of East Anglia, specifically the construction of a pair of new residences; the Blackdale development. The development itself represents an interesting example of a system of practice, with many different potential examples of governance relations. The system is centred on the physical construction site, which is governed by a series of project management practices, themselves governed by the University and regulatory practices which are themselves governed by local government and professional bodies, overseen by national bodies such as the UK government. The whole development has a strong theme of sustainability, which offers the chance to study performative sustainability in practice in situ. To achieve this there followed an in-depth mapping process involving interviews, (Bernard 2017) on site observations and documentary evidence, which provided a structure and groupings of practice to create a map of the whole system.

In order to fulfil its promise of informing a new paradigm around governing systems of practice, the thesis has three primary questions to answer, starting from first principles, identifying the system of practice as its object of study. These questions then allow an interrogation of its various patterns and structures. The three represent a funnelling process of applying increasingly detailed scrutiny to the case study, starting with the creation of a full map, before picking out specific cases within it to highlight key themes and points of interest for further study.

1. How can systems of practice be mapped?

This is partly a methodological question and partly a practical necessity for understanding a system of practice. In order to be able to explore the system of practice around Blackdale there needs to be a new methodology to facilitate the exploration and population of a map of practices well as some form of scheme for organising such a system in a visually understandable way.

2. What are the relationships between practice and governance within this system?

Having produced a map there is then a need to situate governing practices within it and examine their properties. The case study contains many different governing relationships between practices and structures and this question provides an opportunity to fully more investigate their natures.

3. What are the implications for reflexively governing systems of practice for sustainability?

Tying the thesis back to its initial theme of sustainability, this question addresses how sustainability is performed within the system and how it is instantiated at various different key locations. Having identified many different forms of governance within the system there is then a need to recognise the more effective reflexive structures identified in this chapter as being key to the success of an ongoing sustainability agenda. The implications for how we might better organise systems of practice to operate sustainably and reflexively are then open for discussion.

1.3 Contributions of the thesis

Three core areas of novelty are presented in this thesis. It represents advances in methodological thinking around how to approach, explore and map a system of practice. The map itself represents an empirical contribution in that previous attempts to map systems have primarily been performed in the abstract without the benefit of a corresponding dataset. The theoretical contributions of the thesis include developing a conceptual framework around systems of practice, situating governing practices within systems of practice and connecting concepts of reflexive governance with SPT.

Empirically, this thesis represents one of the first attempts to identify and document a system of practice as it evolves in situ through linkages between practice, acknowledging the governance relationships present and operating within that same system. Previously practice theory has either focused on isolated practices (Shove & Pantzar 2005, Geels 2010), small scale groups (Gram-Hanssen 2011) or abstract models of large phenomena (Schatzki 2011, Watson 2012, Schatzki 2015). This thesis sets out to create a map of a system of practice, something which has only recently

been achieved *ex post facto* from existing data (Macrorie 2016). A system of practice is a relatively new idea and given that the process of mapping is time consuming it has not often been attempted and not yet using empirical data to create and anchor the system. Its novelty is in providing real-world empirical evidence for a phenomenon that has been essentially theoretical until now.

Providing the empirical results is the methodology. Taking the form of a case study, it uses simple but well established qualitative methods to explore and map a system of practice in situ. It combines participant observation, semi-structured interviews and documentary evidence to bound, structure and populate a system of practices that can be sampled further to highlight specific areas of interest. Previous examples of systems of practice have either been based on anecdotal experience and observation (Schatzki 2011) or constructed from existing data that had not been produced for the purpose (Macrorie 2016). This methodology was designed from the outset to form a map of a system of practice, although the map itself was created through an iterative process starting out using an actor network based model to structure the fieldwork and transitioning to a true system of practice for analysis. Because it was an iterative process it also presents opportunities for refinement in the future, leading to more efficient system mapping processes. The methodology and subsequent empirical chapters represent proof of concept for mapping systems of practice, setting the stage for a potential new research into different types or scales of system.

The theoretical contributions within this thesis include developing a robust model for a systems of practice approach as well as combining elements of SPT and reflexive governance into a conceptual framework that can then inform further empirical work. SPT and reflexive governance have shared an intellectual space for some time (Shove & Walker 2010, Shove 2014) but not been explicitly combined until now. In combining the two theories this thesis situates governance in, rather than outside or above systems of practice. This understanding of governance being a practice like any other and present within the system presents a challenge to the currently dominant, top-down understanding of governing.

In creating the theoretical model for a system of practice, in preparation for empirical data to populate the structure, this work has drawn together and synthesised elements of several different branches of SPT as well as reflexive governance thinking. Each has formed a part of the structure of the system and added to it. The core elements of the system are the Shovian practices (Shove & Pantzar 2005) that are then arranged into projects (Watson & Shove 2008, Røpke & Christensen 2012). Several other structures were identified as being present as well, usually by interaction with the core projects rather than being elements in their own right. Here the practices involved were either not clearly defined enough or simply not unified enough to be seen to be part of any overarching meta-practice and are thus noted but not fully described. These elements are then connected together through flows of intervention (Spurling et al. 2013) or information (Voß et al. 2006). The various theoretical strands form a simple but comprehensive system of practices which should be repeatable in future research as well as suitably intuitive for those less well versed in the theoretical particulars to be able to utilise it too. Taking governance to be a part of that system of practice engenders questions around what kinds of governance might be applicable or effective in terms governing that system, or indeed how they might manifest in practice terms.

1.4 Thesis Outline

Having, in this first chapter, introduced the increasingly urgent need for new and innovative approaches to addressing sustainability the next chapter introduces the theoretical underpinnings of the thesis. Beginning with a brief overview of current approaches to sustainability, specifically within the built environment, the literature review presents a critique of the currently dominant techno/behavioural (Watson 2017) paradigm. Social Practice Theory is then introduced as an alternative to the current paradigm. Having introduced SPT there follows an exploration of areas within the theory in need of further examination, namely systems of practice and ways in which practices intervene with each other in deliberate ways. To begin to answer these questions there is then a brief introduction to governance thinking in terms of its evolution from truly command and control structures towards governance (Rhodes 1997, Adger and Jordan 2009, Dryzek 2013) and finally reflexive governance (Voß et al. 2006) is suggested as a possible point of interface with SPT. The final

sections of the literature review detail the creation of the conceptual framework that will be carried through the rest of the thesis, generating the research questions and forming the basis of the system of practice maps. This chapter ties together two main strands of literature into a conceptual framework that informs the rest of the thesis.

Having tackled the theoretical foundation of the thesis, the methodology describes the means by which it is applied to a real system of practice. Chapter three introduces a novel methodological approach to account for systems of practice and map them. It provides details of the methods required to achieve the map as well as case selection for which aspects of it will then be analysed further within the empirical chapters. The initial sections of the chapter detail the rationale for a case study approach and selection of an appropriate example. This example was the Blackdale development, a system centred on the construction of new residences for students at the University of East Anglia. The following sections give an account of the four phases of data production that facilitated the creation and refinement of the map of the Blackdale system of practice. Having explained the setting and the process for data production Chapter three moves on to the methods used, detailing the semi-structured interviews, participant observation and supplementary documentary evidence. The next sections detail the nature of the analysis of the system and the sampling of areas of particular interest to be addressed in subsequent chapters. The chapter finishes with a discussion of research ethics.

Chapter four is concerned with describing the Blackdale system of practice before identifying key themes and large scale relationships between groups of practices. The system is broken down into three bands: the Practices of Governance, the Practices of Construction and the Practices of Habitation. The governance band addresses the policy aspects of the system, further subdividing them into national, local and UEA policy and describing the different relationships that each has with the other elements of the system. The second section addresses how the Practices of Construction come together to form the physical artefacts of the development as well as the reflexive structures that facilitate learning and dissemination of knowledge from the process. Chapter four ends with an exploration of the Practices of Habitation, which include both the everyday practices of residents within Blackdale and the various processes by which the buildings are maintained, protected and

connected to the larger infrastructure of the University through practice. This chapter introduces the structure and basic governing mechanisms of the system of practice around Blackdale, giving an overview that informs the more particular analysis performed in the next two chapters.

Chapter five explores themes of governance in more detail by taking three specific instances of governance either in, or through practice using three focused cases that highlight different performances of governance. Each case is broken down into a vignette introducing the subject, a description of the practices involved and an analysis of the relationships between that practice and the wider system, taking elements from Schatzki (2015) and Macrorie (2016). The first case features the instigating moment of the system, presenting an alternative understanding of its place within the system from a practice perspective. The second addresses the process of design and discusses the ways in which practices combine and are bound together and steered as a project. The final case interrogates the effects of interventions from the system on everyday practice of students, specifically cooking, before moving on to address the way that student practice affects university policy. This chapter and its structure provide an insight into the different ways in which governance is performed throughout the system while providing a narrative that follows the development of Blackdale from inception to occupation.

Chapter six moves on to address the relationship between the Blackdale development, sustainability and reflexive governance. It begins by presenting findings around how sustainability manifested within the system of practice. Using the examples of the three focused cases from Chapter five, it defines sustainability in terms of either economic, social or environmental sustainability or that of the status quo. The next section uses specific examples of reflexive governing practice to indicate how such an approach can aid in action towards sustainability through more effective governance of practice. While celebrating the instances of reflexive governance present within the system it is noted that such reflexive practice is not universal. The final section sets out some recommendations for how a system of distributed reflexive governing practice could be implemented within the Blackdale system. Chapter six ties together the three empirical chapters by using elements of all three to produce an idealised but operable exemplar of how to govern this system of

practice for sustainability. Using a combination of the mapping techniques developed in Chapter three along with concepts of co-design and anticipatory reflexive governance, the final section suggests how Blackdale could have become an example of truly reflexive governance and, by extension a sustainable system.

The final concluding chapter summarises and synthesises the findings of the previous chapters. It begins by providing answers to the research questions by synthesising the findings of the methodological and empirical chapters before detailing the empirical, methodological and theoretical contributions of the thesis with specific reference to how each one has expanded on the available literature. In the concluding section there is a proposal for a new research agenda around systems of practice and governance for sustainability along with some examples of further work that could be done to refine and expand the approach. The research agenda is completed with suggestions for potential action research which could hopefully represent a solution to the current crisis of governance.

Chapter 2: Approaching Systems of Practice

Chapter One situated this thesis in its historical context, establishing the need for a new and different approach to governance for sustainability. This chapter places that need within the current literature. It does so by exploring the current understandings of sustainability and governance and how they are applied, specifically in terms of the built environment. As stated in Chapter one, the current sustainability regime is not achieving its potential or even its own targets. As such, a brief critique is made of current practice before moving on to two literatures that show promise and could be combined to provide a new approach to sustainability governance: Social Practice Theory (SPT) and Reflexive Governance.

The first of these literatures, Social Practice Theory, provides a more holistic approach to the understanding of social life. This is principally because it does not draw a distinction between technological and social innovation but rather takes as its unit of analysis the practices that are formed by the interplay of the two. SPT is relatively new and has only recently begun to gain traction within governance thinking. This is in part because it has, until recently, predominantly concerned itself with isolated practices, and partly because it has not yet looked very much into how practices interact within large systems. While these concepts are being addressed, as discussed later in the thesis there is also a need for further exploration of how practices govern and are governed, or even if they are governable. These two gaps within the SPT provide much of the rationale to the conceptual framework.

The second literature is that of reflexive governance which conceptualises governance as an ongoing, iterative process facilitated by constant learning and adaptation. It is brought in at this point to help answer the last of the key questions around governance within SPT, and how it interacts with sustainability as a topic. It is suggested that if there is to be meaningful governance of practices as they are understood by STP then a different approach to governance is required. While governance thinking has increasingly leant towards distributed forms of decision-making, reflexive governance treats governing as an ongoing cycle of learning that is needed if there is to be governance of the kind of dynamic systems that SPT suggests.

This alternative approach to governance provides the basis for a conceptual framework based on governing systems of practice.

The chapter finishes with the creation of a conceptual framework which provides a simplified model of how governance might occur within a system of practice. This framework combines elements from SPT – to conceptualise the constitution of the system – with aspects of reflexive governance to suggest how those elements could, or should, interact with each other as part of a governing relationship. From this framework come the research questions for the thesis.

2.1 Current approaches to sustainability of the built environment

This section is a discussion of the current paradigm around sustainability and how it is achieved within the built environment. The focus on the built environment is due to the system being observed and analysed throughout the remainder of this work being grounded in a sustainable building project. Much of the rest of this chapter could be applied to any system, but for the sake of both brevity and specificity this section will be devoted to the built environment.

Sustainability interventions into the built environment are in intention and by definition sustainable development (UNCED 1992). The concept of sustainable development brings with it certain assumptions about what the project is for and how its goals will be achieved. First and foremost is techno-optimism (Huesemann & Huesemann 2011; Alexander 2014), which presumes that ecologically-sound practice can be achieved through technological innovation and continual improvements in efficiency. In this case it refers to the assumption that the student population and the built footprint of the University of East Anglia can be increased whilst keeping environmental impacts minimal through innovative construction practice and materials as well as incremental increases in efficiency of the built environment of the campus. The assumption that continued expansion is required for economic sustainability is, in theory, balanced by the technological improvements to the built environment and increased of resource use.

Spurling et al. (2013) note that current means of intervention towards sustainability come largely under three brackets: technological innovation, shifting consumer choices and behaviour change. Since shifting choices is a key part of the 'attitude, behaviour, and choice' (ABC) model of behaviour change (Shove 2010), for the sake of this review the two can be used together only with technological changes and behavioural ones. Starting with the first of these, technological innovation is very much an engineering response to the need for change. It presumes a kind of 'social stasis' and that technology will be enough to achieve sustainability goals in the absence of any social or behavioural change (Shove 2014). Technological changes do not, however, occur in isolation, at least not on a societally significant scale. They are encouraged through governance interventions such as regulation, target setting and the upgrading of infrastructure (Bulkeley et al. 2007).

Technological innovations manifest as interventions in different ways. The Green Deal and its predecessors were explicitly aimed at refurbishing the UK's aging housing stock with the introduction of more efficient and renewable technologies subsidised by government (Hamilton et al. 2013). Sustainability standards such as the Building Research Establishment Environmental Assessment Method (BREEAM) and Passivhaus Standard are aimed at ensuring new building stock is built to the highest standards possible in order to minimise the need for energy and resources over the expected lifespan of the development. Standard Assessment Procedure (SAP) ratings are applied to buildings and equipment to both increase awareness of energy use and encourage the use of low energy products. The 'Merton Rule' has been introduced as part of planning policy to ensure that new commercial buildings generate at least 10% of their energy demand from renewable sources based onsite (TCPA 2006; Rydin 2010). Taken together, these approaches are intended to improve current technology and to ensure that anything built, going forward, is of a high standard. Simply put, if a physical system can be made to function more sustainably, then happenings related to and within it will then be sustainable.

There are many issues with an approach to sustainability relying solely on technological innovation, not the least of which is that a lack of political support has caused a number of interventions to be either ineffective or to simply not live up to their potential (Williams & Dair 2007; Geels 2018). Another important way in which

technological fixes often fall short of expectations is the “performance gap” (Vassallo et al. 2018), which represents a key criticism of technological innovation as an approach to sustainability. The performance gap refers to the disconnect between the building designers’ expectations of energy efficiency and the in-use efficiency of a building. The gap is by no means a solely technical problem, being as much to do with how the building is lived in as it is to do with modelling inaccuracies, technical faults, and a deficiency in construction skills (Wingfield et al. 2008). Nonetheless, technical change is still viewed “as following an almost pre-ordained pattern of design, development and diffusion” (Guy 2006 p654); this approach has been shown to be linear, reductive and partial, often resulting in unexpected or below anticipated outcomes. The performance gap is a long-standing and well-established problem (Shove 1998; Menezes et al. 2012; Vassallo et al. 2018) that remains even after decades of study. While some initiatives, such as the Soft Landings framework (Way & Bordass 2005, Bunn 2014) attempt to eliminate or at least bridge the gap, the main response has been a shift towards behavioural interventions intended to complement technical upgrades.

Underpinned by the principle of ‘*Homo Economicus*’ (Reckwitz 2002), through which human behaviour results from linear and rational decision-making processes, and that individuals are “self-interested, knowledgeable and economically calculative when considering energy measures” (Guy 2006 p647), it is assumed that the performance gap can be lessened by bringing behaviour more strongly into line with the design specifications of a building. Anderson and Bows (2011) supported this statement by also noting that, from a sustainability standpoint, behavioural change approaches also offered an opportunity to radically reduce greenhouse gas emissions without significant technological change.

Such behavioural approaches to understanding social change have endured since the 1970s (Craik 1973) and have grown to be a dominant force in political thinking in recent years. It speaks to the capability to influence the cognition of individuals in order to make them more voluntarily compliant to policy goals and “represents a substitute for more coercive forms of state intervention” (Dilley 2015 p12). Behavioural psychology began to appear as an approach in governance discourse in the latter decades of the twentieth century (Rhodes 1997) and came into government,

specifically in the form of the Department for Environment, Food and Rural Affairs' (DEFRA) Sustainable Behaviour Unit during the last Labour government (Dilley 2015). The approach has become a dominant part of government interventions, with most public policy either aiming to affect public behaviour or factoring its effects into strategic decisions (Dolan et al. 2010). Its aim is to facilitate the choosing of alternative behaviours in order to lessen the environmental impacts of those behaviours.

The approach has evolved over time. Initial interventions focused on simple information provision, reasoning that man is a rational actor and that it is possible that all variables can be taken into account by the self-interested 'rational man' (Reckwitz 2002). It assumes that choice is autonomous and removed from the systemic context in which it exists. More recent research has utilised more up-to-date social psychology principles to create interventions that are more concerned with social norms, attitudes and values. These principles are encapsulated in the ABC approach described in Shove (2010) and later by Whitmarsh et al. (2011). In this approach, changes in underlying attitudes are expected to drive behaviours, which in turn inform individual choices.

There is evidence for the effectiveness of these kinds of rational actor, economically-based interventions. Dobson (2009) and Poortinga et al. (2013) both note the speed with which cost-based interventions can have an effect. However, the effects of those interventions tend not to last beyond the sanctions or incentives imposed and in some cases can even result in undesirable consequences such as refusal to behave in a certain way until incentives are re-instated (Dobson 2009). This rapid effectiveness means that these types of interventions can be effective for short-term goals but that for longer-term systemic change either there must be constant reinforcement of the original intervention or another approach is needed.

Having established the value and shortcomings of such simple forms of intervention, there comes a more systemic view, based not on choice, as such, but on 'choice architectures', the creation of systems of unconscious drivers and contextual cues that encourage particular modes of choosing. The concept was introduced to governing practice through 'Nudge' (Thaler & Sunstein 2008), arguing that while

individuals may not be entirely rational they are at least predictably irrational. Dolan et al. (2010) recently attempted to bring various strands of behavioural thinking together under one model with the MINDSPACE principles. These elements are considered to be the factors that shape an individual's choice beyond the more simplistic cost/benefit analysis suggested by the 'rational man' hypothesis.

Element	Description
Messenger	Describing the amount of trust placed in the source of new information
Incentives	Risk aversion is very strong within human psychology, incentives must be substantial to outweigh it
Norms	Individuals are strongly influenced by the actions and thoughts of others
Defaults	'Go with the flow': Individuals are more likely to do what they already do than perform new actions
Saliency	Relevance and novelty of potential new activities
Priming	Influences by subconscious cues
Affect	The effect of emotional associations with actions, on actions
Commitments	Individuals preferentially follow through on action they have previously stated they will take
Ego	Affects the individual's internal self-image of his/herself

Table 2.1 MINDSPACE elements adapted from Dolan et al. (2010 p8)

The principles of choice architectures are used widely within both government and commercial sectors as a means of subconscious marketing (Thaler & Sunstein 2008 p4, Jones et al. 2011, Jones et al. 2013 p119). However there is still evidence of more simplistic approaches being applied through sustainability policy. One example is the smart meter. Arguably seen as a technological innovation, the smart meter is in effect an "information deficit" (Hargreaves 2011) behavioural intervention since it has no effect on the building's operation and is aimed at inspiring change in the habits of those within. Hargreaves et al. (2010) suggest that the effects of monitors were minimal or short-lived because the new technology was domesticated and simply folded into practices that existed already. Gram-Hanssen (2011) and Spaargaren (2011) both note domestication as a major factor in how interventions can fail on the ground due to not being fully cognisant of the reality of social life. These are included to showcase the problems with either the technological or behavioural approach.

However, the primary reason that there needs to be a new paradigm in addressing social life is the value-action gap. Both Dilley (2012) and Spaargaren (2011) acknowledge that individualistic behavioural interventions, successful or not, boost awareness of sustainability issues. With that being said, awareness is not itself a powerful driver of behaviour due to the poor conversion rates between information, attitudes and behaviour (Barr 2006). The value-action gap described by Barr (2006) is a critical flaw in behavioural thinking because it suggests that there is no direct link between interventions to change attitudes and sustainable outcomes.

In essence the narrative presented in this section is one of technological intervention running into the performance gap where the material context of practice does not connect fully with the actions of those inside. The performance gap is then addressed through appealing to behavioural approaches, which then run into the value action gap where cognition does not translate fully to action. What is needed is an approach that links the material, the meaning and the actions of social life together. In terms of governance, by acting on the cognition and decision-making of individuals, behavioural approaches are attempting to simultaneously drive potentially millions of tiny, separate levers at the same time rather than attempting to identify potentially larger more powerful levers at a systemic level. The approach relies on individuals making voluntary decisions, often after priming those decisions with additional information or attitudinal adjustment, but nevertheless, voluntary changes undertaken by individuals. Current understandings of intervention are generally aimed at either the technical or the behavioural. While it might be unfair to say that neither has an appreciation of the effect of the other, both are treated as separate pathways.

“The trick is simple: to decide and act rationally, one needs to isolate discrete dimensions of complex reality, that is, to select relevant elements, express cause and effect in linear form, establish the priority of goals and assign responsibilities” (Voß et al. 2006 p5)

The above quote speaks to the reductive way in which both are considered to be separate pathways for intervention. They speak to an assumption of narrow, technocratic command-and-control style governance which, while it does not

particularly reflect reality, does inform the thinking behind interventions towards sustainability. This thesis departs from these understandings in two key ways. The first is that it moves away from behaviour and technology as being somehow separate. The second is that it seeks to understand and explore concepts of reflexive governance and the ways in which they might inform a more cohesive approach to sustainable systems.

The understanding of the behaviour and technology as being unconnected is intuitively foolish as each will always interact with the other. SAP ratings are achieved through technological innovation but also form part of choice architectures. The Green Deal is unquestionably based in green technology applications but is still clearly designed to appeal to *Homo Economicus*. Smart meters might be defined as a technological intervention but, as noted, the intended effects are behavioural (Hargreaves et al. 2010; Hargreaves 2011). Passivhaus is the quintessential 'build and forget' approach since it explicitly involves designing a building to modulate its environment with minimal intervention; but, even here, if this internal regulation is not taken into account by the practices of those inside then it will not function as designed. Having established that not only are the two approaches not effective when nominally used in isolation, they actually cannot be separated and to assume otherwise is to not take account of the system as it is (Voß et al. 2006).

It is clear that if we intend to meaningfully govern sustainability within the built environment we cannot separate its elements and their interactions. There is also a need to address the 'gaps' in the system which current thinking avoids. There is a need for a more holistic approach that constructs social life in a way that combines people, objects and the connections between the two. With a new understanding of social life comes a need to govern it in a way that appreciates its complex reality. These two needs can be met in the combination of SPT and reflexive governance as the rest of this chapter will show.

2.2 Social Practice Theory

Social Practice Theory (SPT) is an innovative, dynamic and emergent field of study. It has been condensed from the work of a number of prominent scholars and philosophers, specifically Bourdieu, Giddens, Taylor, Foucault and others (Reckwitz 2002), and in recent years has enjoyed greater prominence recently (Warde 2005, Shove 2014). It offers a radically different framing of how sustainability might be achieved. Rather than as a rational reaction of an individual to environmental stimulus it states that practices are a manifestation of social activity and composed of elements which, while subject to change, define and reinforce the identity of that practice through time (Shove 2004). Since SPT's inception, a number of scholars have suggested a range of different elements that make up practices (Table 2.2). For the purposes of this thesis the model proposed by Shove & Pantzar (2005) will be the principle example used with additional elements being brought in from other notable scholars to allow for a greater degree of flexibility in terms of scale (Schatzki 2011, Røpke & Christensen 2012, Macrorie 2016).

Model	Elements
Schatzki (2002)	-Practical understanding -Rules -Teleo-affective structures
Warde (2005)	-Understanding -Procedures -Engagement -Items of Consumption
Shove & Pantzar (2005)	-Skills -Images -Artefacts
Reckwitz (2002)	-Body -Mind -The Agent -Structure/process -Knowledge/Discourse/ Language -Things

Table 2.2 Adapted from Gram-Hansson (2010 p154) and indicating the range of different elements of practice suggested by contributing scholars.

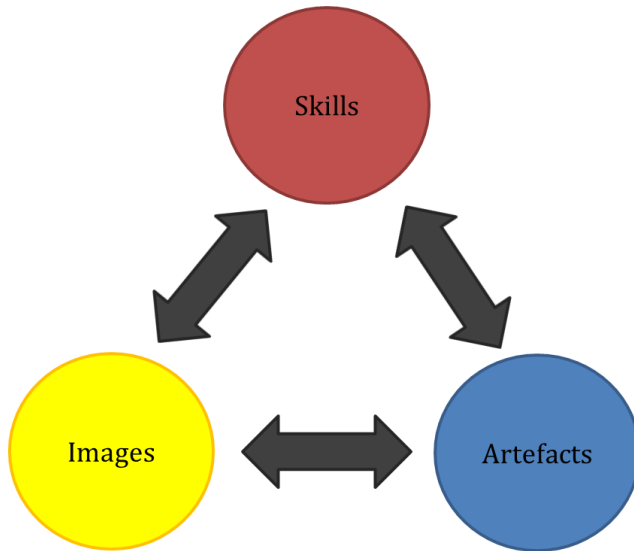


Figure 2.1 Adapted from Shove et al. (2012 p29)

Being relatively simple compared to the other models the Shovian model is the ideal for applications outside the theoretical and analytical space that practice theory often occupies. As noted in table 2.2, Shovian practices are made up of a combination of three elements (Figure 2.1): Skills, Images and Materials. For the purposes of this thesis the term Material is substituted for Artefact so as to more clearly identify later on when specific reference is being drawn to an element of practice. Each element interacts with the other two and it is these connections that stabilise the practice. This stabilisation leads to another of the core departures from behavioural thinking in that practice theory is concerned primarily with normality, rather than novelty (Hargreaves et al. 2013).

Practices are perceived to exist in two forms, entity and performance (Cetina et al. 2005). The performance refers to each individual iteration of the practice in real terms; each one is going to be very slightly, or potentially radically, different while retaining the same basic elements. The practice, as an entity, is defined as the sum total of all performances of practice bearing its name. As an example, a child painting a model airplane requires a very different performance than that of a toddler's finger painting or an adult painting a mural in a cathedral, but all three are engaged in the practice of painting. This example shows that the skills, artefacts and images can vary quite radically between practices while they remain technically the same practice. This capability to be both general and specific is useful from a governance perspective

as it allows the analysis to be both easily generalised to a large population and simultaneously be applicable to a smaller case study that might include a very specific performance of practice.

Because practices can be viewed independently of individuals, SPT decentralise the individual from practices and instead focuses on the elements of that practice, and how they interact, change and reinforce each other both spatially and temporally. This decentralisation is at the core of SPT's novelty compared with the approaches seen in section 2.1 because it allows engagement with the 'gaps' rather than focusing on either the material or the individual. The individual, such as they exist within SPT, is considered to be a carrier of the practice who has been either recruited or captured by it. Whereas a cognitively-based approach carries with it a tacit assumption of choosing to use energy, or not, as part of daily life, SPT states only that practices are performed and that energy is used as part of that performance (Shove & Walker 2014).

This concept that energy use is not an action in itself, but a by-product of practices (e.g. heating a room or cooking a meal) is key to what differentiates SPT from the current techno/behavioural approaches. To quote Hargreaves (2011 p83), "Bringing about pro-environmental patterns of consumption, therefore, does not depend upon educating or persuading individuals to make different decisions, but instead on transforming practices to make them more sustainable". Introductions of new skills and new ideas about how things can be, and are, are routes through which practices have been changed. By eliminating the need to interface directly with an individual or structure, practice theory gives a very different perspective on how to influence action towards sustainability, well outside of the current rational actor paradigm (Shove 2011). Despite, or more likely because, it does not conform to the more mainstream Attitude, Behaviour, Choice paradigm, SPT has not gained the traction it possibly should have within policy circles. This could be due to any number of factors. As Hui (2014 p7) comments, practice theory can be "difficult to digest upon first encounter", despite the fact that it is primarily in the business of describing the very ordinary. Shove (2015) acknowledges this but states that we should not be trying to put practice into architecture that already exists. It is valuable precisely because it is paradigmatically opposed to the techno/behavioural responses being suggested now.

With regards to driving sustainability forwards, SPT provides, perhaps, a more positive vision than the more traditional rational actor-based approach. The idea that providing information to people in order to affect their attitude and behaviour is shown to be something of a fallacy by the existence of the value-action gap (Doherty 2014) and such information, if not phrased in terms of a positive, achievable and affirmative message, can be functionally toxic to action on sustainability. Because of its focus purely on the doing of things practice theory avoids potential pitfalls of the value-action gap.

Practice theory has been useful in filling in gaps in traditional thinking, and making sense of results of policy interventions that either fail or produce unanticipated reactions. Kuijer and De Jong (2011) note its potential for eliminating rebound effects through co-design practice. Gram-Hanssen (2011) highlights that due to the internal practices that take place in, for example, heating a house, the energy consumption of that house could be up to 400% higher than its otherwise identical neighbours. The current techno-behavioural thinking has no serious answer to this; a house is treated as a “Black box” with little or no attention given to what actually happens inside to drive its energy consumption (Burgess, Nye & Hargreaves 2010; Gram-Hanssen 2011). Policy instead takes that “black box”, presents it as “living standards” which are considered as an immutable part of its equation, and focuses almost entirely on efficiency (Shove & Walker 2014). This is a major flaw in contemporary thinking that practice theory helps to deal with (Hargreaves et al. 2013) by producing a much more comprehensive model of social life.

The acknowledgment that change occurs outside of governance systems as well as from them ties in well with SPT and particularly the assertion by Shove (2015) that change can come from anywhere within systems. Practice theory, as previously noted, does not relate particularly well to traditional theories of governance due to paradigmatic differences in understanding what the object of governance should be, who governs, and by what means. While SPT acknowledges the role of technology through artefacts and their interactions with the other elements, it does not by any means place it at the centre of its interventions. Instead, technology is a means to affect the social and vice versa. This represents a more comprehensive vision of

systems of practice and governance in that they acknowledge more aspects and possible levels for change, both initially and through time.

Having identified SPT as a robust and potentially useful theory with which to inform a push towards sustainability it should be acknowledged that it still harbours several notable weaknesses that need to be resolved if it is going to fully realise its promise. The first is that while it does scale up and down in terms of practice, it does not scale up to address systems as yet, and certainly not empirically. The second is that it does not readily interface with theories of governance at the moment.

Initial criticism for SPT focused on its use of relatively small and esoteric practices as case studies, such as “Nordic Walking” in Shove and Pantzar (2005). Additionally, SPT has often come under fire for its descriptive nature. Geels (2010) attacked it for a tendency to describe rather than explain in addition to only looking at isolated cases, and indeed Lente (2014) suggested that practice should look more towards empirical questions than analytical ones. Watson (2012) noted the criticism that SPT has difficulty accounting for changes in practice, partly due to its descriptive nature meaning that while it might be observing a particular practice, that practice has not been situated within a system of practices. Aspects of how practices might interact in large systems have been addressed over the last decade or so but so far there has been limited success in forming a complete vision of a system of practice and even then, these concepts have remained theoretical before now (Watson 2012, Schatzki 2015, Nicolini 2016).

As Shove (2011) points out, the dominance of the ABC paradigm makes it difficult for other framings to gain traction within governance thinking. Even relatively sophisticated models of governance do not readily interact with theories of practice (Hargreaves et al. 2013). Indeed Shove (2015) argues that it is a strength of SPT that it offers a fundamentally different social landscape which can be interacted with differently. This is compounded by the effect of the complexity and dynamism of practices being largely incompatible with command-and-control style governance. This has led to understandable questions around whether or not practices can be governed (Shove 2014). Bulkeley et al. (2007) make reference to the plurality and multiplicity of governing sites and activities while Shove and Walker (2007) attack

the idea of managers as governing agents. The combination of a lack of interest from those involved in governance theory, due to the perceived impracticality of applying SPT and uncertainty over whether such a thing is even possible, creates a gap in the literature that neither theoretical school seems very willing to bridge. Indeed, SPT would be difficult to use as a tool of governance in this sense since it requires an entirely different understanding of what it is to govern and the place of the governor. This in turn means that new theories of governance are required before SPT can even interface with concepts of governing. Nonetheless, it is understood that practices change over time (Warde 2005) and that they change in response to governance (Shove & Walker 2010) and so the question becomes one of intention and how governance can deliberately shape future practice for sustainability.

This section has introduced SPT as an innovative new approach to existing sustainability problems, but more specifically as a solution to the issue of 'gaps' left by current techno/behavioural approaches. Having addressed its strengths, it is acknowledged that SPT is not a complete theory of social life and that there is still room to increase its understanding of both large complex systems and governance. The following two sections each take one of these areas for advancement, systems of practice and governance. Each will look at the inroads that SPT scholars have made into these areas. Having identified what needs to be done within this work they address these gaps in the theory.

2.2.1 Systems of Practice

Defining a system as a "collection of components connected in relation to a particular function", this section will address SPT as it applies to large systems. As seen with Geels (2010), SPT has been criticised for a focus on isolated or small-scale groups of practices. The lack of a systemic view on social life is a weakness of SPT, which has huge capacity for granularity but often lacks the more strategic view on social systems. With that being said, SPT does possess the tools with which to tackle a more systemic view by looking at how practices work together, interact across systems and group together to achieve goals. All that is needed is an approach that can bring these elements together, apply them and begin to map these relationships. This is a critical issue for SPT. Nicolini (2016) went so far as to argue that addressing large-scale phenomena is necessary in order for practice theory to remain relevant in

theory as well as in practice.

As noted previously, SPT comes inbuilt with the ability to address large social objects as well as small ones in its capacity to engage with practices as both performance and entity (Cetina et al. 2005). The ability to engage with both how a person might navigate their daily commute and the broader practice of traveling to work and how those two relate is a definite strength of the approach. However, that strength comes with two caveats. The first is that, regardless of scale, the scrutiny of a single practice is still in effect an act of describing it and what happens to it (Lente 2014) rather than how practices interact with each other. The second is that it has led to SPT scholars being comfortable in claiming until quite recently that they address large social systems (Shove & Walker 2010) when they are in fact still looking at single objects within systems. The challenge then, is taking this very granular approach and scaling it up in terms how each practice interacts within an ongoing or 'live' system.

To address the problem of SPT focusing on isolated practices, Shove (2004) and Shove et al. (2012) describe the formation of bundles and complexes of practices. Bundles are co-existing practices that might share a particular time or location. Complexes are structures of mutually-dependant practices where aspects of the practices are connected to each other. This is a useful insight into how practices arrange and stabilise themselves. But something more is needed in terms of looking at how they change. Watson and Shove (2008) expand on an idea proposed by Pred (1981) around 'projects'. Pred describes projects as pathways, taken by an individual across time, while Watson and Shove highlight that they "have a rather different status. For one thing, they are more obviously 'made' by human actors who weave multiple practices together" (2008 p81). Rather than being situated in groups of practices, projects are considered to be mechanisms and processes of change. Røpke & Christensen (2012) expand on this and situate the idea firmly in SPT terms, describing projects as a type of meta-practice composed of a complex of practices organised around a goal or intention. Fox (2018) talks about projects as performance pathways; large-scale groupings of practice that are themselves performed in a way that other groupings of practice are not. Bundles and complexes are effectively anchored around a particular point in a system while projects are mobilised through

them. This explicit focus on actions and motion provides an early insight into how systems of practice might organise to move, or to steer themselves.

Having defined what the units of a system of practice might be, there comes a need for “clarification of terms and their relationships” (Lente 2014). Early on, Schatzki (2002) discussed purpose of practice, even going so far as to define shared purpose as one of his three elements of practice. Indeed much of his work has been concerned with organisations (Schatzki 2005; 2006) and their roles as venues for practices to connect with each other. These “timespaces” (Schatzki 2009) become a central tenet of the system of practice in the sense that they are the spatio-temporal context through which practices are carried and the areas in which they can link with each other. When addressing the organisation of large social phenomena, Schatzki (2015) asserts that such organisations are manifestations of webs of linkages between practice as well as their relationship to the material arrangement that they find themselves in. These concepts of systems, are helpful in distinguishing the concept of the system from the actors within it.

The next aspect of systems of practice to be introduced is around the nature of connections between practice. Schatzki (2002) gives an insight into what it is that pulls practices together tightly into projects or bundles. Expanding on that in 2015 he then suggests the nature of linkages between practices and larger structures. Examples of these include the ‘prefiguration’ of practice through its context or ‘intelligibility’ which indicates that practices are shaped by how they understand themselves and their contexts. Macrorie (2016), developing a specifically ‘systems of practice’ approach, gives an exhaustive list of the ways in which practices interact with each other on a slightly smaller scale. Having expressed these various means by which practices relate to each other – as elements of projects, as material arrangements and as systems of practice – it seems there is need for synthesis. It is difficult to imagine any of those three types of practice linkages genuinely happening in isolation and as such any system of practice is going to be comprised of all three happening simultaneously.

As discussed, one of the major criticisms of SPT is an apparent lack of practical applicability. This is one of the main concerns that this thesis is intended to address.

So, having described systems of practice in terms of elements and mechanisms, it is now necessary to apply that theory. To do this, one needs to be able to visualise or map the system, to make it manifest as well as to bound it. There has been some work on this already. Durand-Daubin and Anderson (2014) mapped practices through time and noted changes, while Higginson et al. (2015) looked at mapping the extent of a practice. Both of these added to the discourse but the results, while detailed, lacked the ability to scale out to the level of systems and produced a visual granularity that would have made a larger system unintelligible. Macrorie (2016) suggested a mapping technique based on interrogating the types of connections between practices. All three of these have something to add to creating a systems of practice map, but in effect their value in themselves remains theoretical. To be able to empirically map a system of practice in a way that can be used later, the structure will need to be very simple but represent within it all of the elements found in the three examples above. The ideal is to maintain the granularity of data by being able to interrogate each element of the map, whilst also keeping the structure simple enough to render the whole system visible at once.

One of the elements of SPT that is very helpful with visualising systems is its nature as a flat ontology. Taking the opportunity to better define the place of the governor within systems, Schatzki (2016) explains that being a flat ontology means that SPT conceptualised social life as devoid of hierarchy, but more specifically with lacking any substantive or distinct existence beyond themselves. That is to say that there is only one type of thing, a practice, that social life is comprised of and it is then subsequently formed into different arrangements and systems.

“Social affairs display a certain high-level ontological sameness: Every social phenomenon consists of slices or aspects of the plenum of practice-arrangement-bundles”

(Schatzki 2016 p33)

This also speaks to work by Watson (2012) on the ubiquity of certain practices throughout social ‘strata’, that there can be no top-down governance as SPT ‘cross-sections’ traditional hierarchical structures. This flatness, while not doing away with the idea of governance, makes it much easier to visualise a system because, being flat,

it can be represented effectively in two dimensions and consisting of a relatively limited number of elements. It can also make it more difficult to define and differentiate between the effects of what could be the determined act of a conscious governor and the effects of large-scale social pressures or technological change. In a theoretical sense this is useful, and in a very practical sense the ability to simply visualise the system like this is valuable. However, a flat ontology conflicts with traditional models of governance that are based in power structures and hierarchies composed of many different types of actor. It remains to be seen which of these effects is most influential in the task of applying the findings of this work.

Within the SPT literature there is certainly the potential for creating a systems of practice approach. Indeed, there has been some success towards that goal. The scaling up to a systems of practice approach naturally begins to engender questions of governance. It is understood that practices are governed (Shove & Walker 2010), but that governance is thought to be external to the practices (Hampton 2018). An understanding of systems of practice naturally gives way to the understanding that governance occurs within the system between practices. This governance may or may not be the result of intentional intervention but still results in a governing relationship between the practices. It is assumed that governance is taking place, but the nature of that governance requires disambiguation. The next section will begin to answer these questions as far as they have been addressed, thus far, within the SPT literature.

2.2.2 Intervening in Practice

In the previous section, there was a discussion of how practices interact, specifically in large groups and arrangements. What has been left out thus far is the concept of intervention; how practices might affect each other through their own intentional performance. SPT has moved from focusing on single, isolated practices towards research on groups and systems of practice. All the while, it has attempted to account for changes observed in those structures. What has not received as much attention are the ways in which practices intervene in each others' operation; specifically, how that type of between-practice intervention might be achieved intentionally to accomplish specific policy goals.

To begin with, much of the work being done on how practices might govern was done in terms of linking SPT to other theories. Shove & Walker (2010) understood that there was a relationship between traditional governance methods and changes in practice over time. Watson (2012) introduced the systems of practice approach in order to combine theories of practice with socio-technical systems approaches that were more commonly found in governance discourse. Hargreaves et al. (2013) linked SPT with the Multi-Level Perspective (MLP), which is a more mainstream model of socio-technical transitions and acknowledges governing structures. Both Hargreaves (2011) and Dilley (2012) apply SPT to 'pro-environmental behaviour', looking specifically at how such interventions are introduced and executed over time. All of these represent attempts to interface with methods of governing and to understand how practices might fit into these wider systems of governance. However, most of them are simply applying a practice lens to different methods.

Spurling et al. (2013) takes these attempts at theoretical synthesis a step further by first critiquing the more traditional means of intervention and then proposing a series of new ones based within a practice paradigm. One of the important differences between the two sets of interventions is that, while the more traditional interventions are concerned with the introduction of novelty, the practice-based interventions are primarily concerned with normality; that is to say, changing what is considered to be normal (Hargreaves et al. 2013). The table below details the nature of the two different groups of intervention and what each is intended to target.

Target of intervention	
Traditionally-framed interventions	
Innovating technology	Reduce the resource intensity of existing (and predicted future) patterns of driving by decarbonising the car (modifying combustion engines, R&D on electric cars) and decarbonising the fuel source.
Shifting consumer choices	Car dealers to provide more and better information to consumers so they can choose more sustainable options.
Changing behaviour	Encourage individuals to adopt fuel efficient driving, for example through information campaigns and changing the driving test (and how 'good driving' is taught).
Practice framed intervention	
Re-crafting practices	Change the elements of existing driving practice to encourage the move to fuel-efficient driving. In addition to information campaigns (understandings) and changing the driving test (skills, competence and know-how), intervene in the infrastructure and vehicles which also play a part in how driving is performed.
Substituting practices	Encourage the replacement of driving with other alternatives by ensuring these alternatives directly compete with driving for 'recruits'. For example, re-craft cycling so that it directly competes for commuters.
Changing how practices interlock	Intervene in the spatial and temporal organisation of practices to change how mobility interconnects with shopping, work, habitation and so on.

Table 2.3 Interventions in practice taken from Spurling et al. (2013 p5)

While on the face of it each of the practice interventions might seem simple, each is, in its own way, a departure from the current paradigm. Re-crafting practices involves changing the elements of practice either by altering the elements or replacing them entirely with new skills, images or artefacts. Substituting practices involves removing practices entirely and replacing them with others, such as in Watson's (2012) example of giving space that would previously have been used for automobility over to velomobility. The last of the three practice interventions involves changing interactions between practices. Of the three this is probably the greatest departure from traditional thinking. It involves re-defining the institutions that determine when practices take place and re-making the infrastructure that defines where practices take place. This could involve, for example, synchronising certain bundles of practices to make them operate more efficiently or de-synchronising in order to smooth out peaks in demand and lower capacity requirements. While each one might be achieved through commonly understood means, such as an information campaign or replacing

technology, the change in framing to specifically intervene in practice makes interventions like this more conceptually accessible for policy makers.

The three new types of intervention are couched specifically in terms of policy, rather than the possibility of more socially-based interventions. However, Spurling et al. (2013) suggest that a practice perspective should encourage modesty on the part of policy with regards to influencing social change. This modesty comes in the form of acknowledging a relative lack of control over the social environment in which changes take place. It does not follow however that accepting the complexity of transitions means that only small incremental changes can take place. The paper goes on to mention that since practices of working, travel and communication have changed so radically over the past decade or so, there should be great optimism concerning the scale and depth of change that might be achieved. It does, however, caution against assuming the practices will change for the better, becoming more sustainable over time. To ensure such a trajectory, there must be some guidance.

The reason for this is explained further in Shove (2015); governance can, conceivably, come from anywhere within a system. Since practices interact, either by forming bundles, complexes, projects or systems or by simply sharing elements, changes in apparently unrelated practices can have far-reaching effects. The social nature of practice means that they can change without any form of traditional governance. Practices can, in effect, govern each other through mutual connections. Almost anything that a practice interacts with could be considered an intervention and as such a form of governance, certainly if that interaction is intentional. This leads to an obvious question, which does not get asked: if we consider the social world to be composed entirely of practices then why, when intentional governance is performed, is it still understood to be the work of rational actors?

A crucial aspect of this situation is an assumption that because practices are internally dynamic (Morley 2014) and able to change without direct governance (Shove et al. 2012) then they are, in effect, ungovernable (Shove 2014). On its face, this seems a flawed argument as any of the papers noted in this section attest to the ability of practices to alter due to changes in their context and even direct interventions. It is understood that governance happens and that practices change,

often as a result of intentional governance even if those governing are not concerned with practices in SPT terms. Shove & Walker (2007; 2008) engage in a debate with Rotmans & Kemp (2008) in which they question the place of managers in transitions in terms of both capability to govern, a tacit assumption of objectivity and the presumption that said governors could accurately predict the effects of their interventions in the long term. This example is added here to illustrate that SPT's rather complex and ambivalent attitude to governance is not a new phenomenon or a result of the recent shift towards thinking about governance. Shove et al. (2015) also suggests the concept of viewing governance as itself a practice. Taking the axiom that 'all is practice' would seem to assume that governance is also a practice but this is rarely articulated clearly. It is hoped that this thesis can add greater clarity to the argument.

It would appear that this section is arguing that practices are simultaneously ungovernable and constantly subject to governance. It seems impossible that the same body of literature should be making both statements, but they are unified by a simple caveat. Using current understandings and methods of governing, practices will never be fully subject to intentional governance, if only because governors currently do not seek to intervene explicitly in practice. The evidence for this is clear, as laid out in section 2.1 and explained in section 2.2. What seems to be required, therefore, is a more comprehensive means of governing. There needs to be a model that acknowledges that social life is both complex and dynamic. Any model that does not acknowledge this complexity is not only not engaging with reality but never was. Such an endeavour would be, while perhaps not doomed to failure, forever limited in the scope of its potential.

A solution to this issue may be found in theories of reflexive governance. Reflexive governance introduces the concept of governance as an ongoing process to this discussion (Sendzimir et al. 2006). If the systems to be governed are independently dynamic, any conscious governor must first note that dynamism, vision what possible outcomes of selected interventions could be, attempt to pre-empt undesirable outcomes (Voß et al. 2006) and continue to observe the system as it has been changed to ensure that the desired outcome of an intervention is reached and that its goal is maintained as further interventions are applied (Rip 2006). The recognition of

internal dynamism is a vital point of connection with SPT; however, reflexive governance research thus far still operates primarily upon the three problem framings outlined by Spurling et al. (2013) and, in particular, technological innovation (Table 2.3).

There are two key messages to take from this section. First, practices are governable using the right method, and second that there needs to be an understanding of what that method is. If we are to understand that it is practices that govern practices then there must be an interrogation of what practices of intentional governance are. The following section includes an exploration of governance thinking as it stands now, and as it has developed from previous incarnations. From there it then introduces reflexive governance as a promising approach to governance with the potential to meaningfully govern practice. This is essential because if practices are not governable through the practices of governance as they are currently understood then there needs to be an understanding of what the practice of governing might look like if specifically applied to SPT.

2.3 Introducing Reflexive Governance

The previous section asserts that there is relatively little interface between governance literature and SPT. With SPT being relatively new, and obstinately incompatible with current approaches to governance (Shove & Walker 2010; Shove 2010, 2015), this is understandable. However, as noted, it is necessary to bring the two together in order to meaningfully address systems of practice.

To fully do justice to this body of literature would be a thesis in itself and as such this section will provide a simplified history to situate the more current thinking. Governance theory has been steadily moving towards more distributed and reflexive forms of government. Rhodes (1997) provides a broad overview of the recent evolution of traditional governance thinking and, following on from that, Dryzek (2013) looks specifically at how sustainability is addressed within governance. In the decades between these two works the accepted perception of what it is to govern has not shifted significantly. Theories of reflexive governance bring a new understanding of the role of governors and the act of governance. Apart from representing a novel approach to governance, reflexive governance forms a potential bridge into a more

systemically-organised incarnation of SPT. The combination of the two theories represents a radical departure from current thinking and has the potential to generate new, more sustainable systems of practice.

Situating governance within the UK, Rhodes (1997) discusses the current British system of government and what it might have become. The Westminster Model, which seems to have become the dominant force in British politics largely by dint of its longevity, has outlasted all other forms of government to become the current model. It is defined by parliamentary sovereignty, strong cabinet government and accountability through elections, it gives the majority party control over the executive, relying on institutionalised opposition to temper the interests of the majority party and to provide further accountability. Rhodes notes a gradual change over time from simple command and control government towards governance, leading to not one, but many centres of government. He notes a constant struggle between opposing forces of centralisation, described as the central government having 'more control, over less' (Rhodes 1997), and interdependence between government and outside actors such as companies and local government/authorities. It is not entirely clear whether this represents a change in thinking on governance or simply a growing acknowledgement of the plurality of governing entities over time but the shift from simple command and control to more a distributed understanding is important.

Having argued for the shift from government to governance, Rhodes explains his position on the various ways that governance is achieved by local and national governors through a series of scenarios based on extrapolations of governance practice as it is now. These are somewhat abstract, and refer specifically to the relationship between local government, central government and other interests, such as the private and voluntary sectors. Rhodes' four scenarios are Centralisation, Contract Authority, Community Government and Differentiated Polity (Table 2.4). They represent the potential for governance to evolve through time dependent on circumstances and the potential variation brought about by interactions between a plurality of actors.

Model	Effects	Policy tools
Centralisation	<ul style="list-style-type: none"> -‘New Leviathan’ -Central government holds control -Greater focus on top-down policy making -Exogenous governance -Local government atrophies and becomes an administrative agent for the centre 	<ul style="list-style-type: none"> -Law making -Regulation -Market stimulation through incentivisation
Contract Authority	<ul style="list-style-type: none"> -Ideal of the new right -Local government is replaced by contracting agency who tenders for and negotiates contracts with private firms and central government -Effectively marketises the public sector 	<ul style="list-style-type: none"> -Incentivisation through subsidies
Community Government	<ul style="list-style-type: none"> -Greatly strengthened local government -Focus on accountability -Issues are brought to the attention of the public and resolved through collaborative action -Heavy emphasis on democratic participation and collaborative action -Central government remains as a link to supranational structures and between local governments but governance is delegated to localities 	<ul style="list-style-type: none"> -Public consultation -Democratic decision-making -Public enquiry -Strong judicial focus
Differentiated Polity	<ul style="list-style-type: none"> -Mix of various policy tools -Closest analogue to the system we have now -Evolutionary approach with tools being brought to prominence or discarded based on ideological synchronicity with government de jure -Does not favour one type of governance over any other -With many different agencies, private companies, NGOs and levels of government interacting simultaneously services become less comprehensible, less effective and less accountable. 	<ul style="list-style-type: none"> -Law making -Incentivisation -Regulation -Public consultation -Partial privatisation

Table 2.4 Rhodes’ (1997) extrapolated scenarios representing different modes of governance

Rhodes (1997) created these scenarios as possibilities, extrapolations of methods currently used in governance but each is a reflection of current policy. They suggest a gradual widening of the concept of governance but does not go so far as to interrogate the idea of changing the objects of governance. It also stops short of challenging the methods or understandings of governance as a practice. Potential policy tools vary between scenarios but represent different selections from the understood catalogue

of methods. While the Rhodes scenarios explore governance in the sense that they acknowledge different sources of decision-making, they remain tied to a paradigm of rational actors acting on behalf of whichever body they happen to represent using well-understood tools.

Dryzek (2013) discusses types of governance in relation to the achievement of particular policy goals, in his case sustainability. These types broadly fall into two categories: technocratic and participatory governance. The technocratic approaches can be further subdivided into Administrative Rationalism and Economic Rationalism, while more participatory approaches reside in Democratic Pragmatism. From these two modes it is easy to see where the techno/behavioural approaches seen in section 2.1 evolve from, with the technocratic approaches focusing on technological intervention and democratic pragmatism leading to attempts to affect the behaviour of the populace.

Approach		Rationale	Methods
Technocratic Rationalism	Administrative Rationalism	Leave it to the experts	<ul style="list-style-type: none"> -Privileging of “objective” scientific information -Regulatory toolset -Instituting regulatory bodies -Standards of practice -Expert advisory committees -Decides, announces and defends policy choices
	Economic Rationalism	Leave it to the market	<ul style="list-style-type: none"> -Governance decisions primarily taken by economists, business leaders and consumers -Policy given capacity to steer only -Intervention through laws, regulation and creation of new markets -Feedback through demand
Democratic Pragmatism		Leave it to the people	<ul style="list-style-type: none"> -Democratic governance by the public -Moderated by facilitators, swayed by stakeholders, distilled and enforced by policy makers -Understanding of public needs through consultation and policy dialogue -Plurality of knowledges and perspectives -Consultation, deliberation and public inquiry

Table 2.5 Models of governance adapted from Dryzek (2013 Ch3)

Both of these models form what Dryzek refers to as the traditional understanding of governance, encompassing the various forms it can take and the means through which it can be implemented. They include within them assumptions of top-down exogenous governance and governors with objective knowledge of full systems (Smith & Stirling 2007). As the quote below explains, exogenous governance places the policy maker outside of the system being governed and assumes that it is possible for an individual to be informed on all aspects of that system before making a decision, in a similar way to the *Homo Economicus* (Reckwitz 2002). It is hardly surprising that these two approaches work, or do not work, so well together with both the assumed object and the source of governance being the decision-making of the individual.

“Most fundamentally there is a politics to the very processes of defining something to manage (the ‘it’, or system) and to the implication that there are managers of the ‘it’ who sit outside ‘its’ boundaries and who can apply transition management tools including levers, niche-building machinery, and engineering devices from a privileged, knowledgeable and external position (Smith & Stirling 2007).”

(Walker & Shove 2007 p221)

Whatever advances have been made in the theories of governance, those currently engaged in governance still understand their role as one of command and control, with this being an ideal that is marred by the realities of having to deal with other entities. This might seem like an unfairly reductive view of those who consider themselves to be engaged in governance, and perhaps it is. However, as long as governors are thinking in terms of exogenous governance and hierarchies then, practically, the outcome is the same. It is these concepts that both reflexive governance and SPT contest, taking the understanding that governors, whatever else they are, are part of any system that they seek to govern. With that understanding comes both a more forgiving attitude to incomplete knowledge of the system and the reinforcing of knowledge as a vital part of governance that must be sought as an ideal.

Having come to the conclusion that both the objects of governance and the understanding of what it is to govern are in need of revision, we find a possible solution in SPT in terms of the object and understanding within reflexive governance (Voß et al. 2006). Traditional governance treats governance as the act of dropping interventions into a static system while reflexive governance, much like SPT, proposes a more humble role for those governing within a dynamic system. It considers governance to be an act of continuous steering through a messy and tangled medium rather than a series of single acts of command. Voß et al. (2006) suggest that this more nuanced and reflexive form of governance presents an effective alternative to the more traditional style of government.

At its very foundation, reflexive governance presents a challenge to the dominant governance paradigm in that it states that it is not possible to govern objectively, citing the "eternal tension" between the need to act without knowing everything and the need to know more in order to act more effectively (Rip 2006 p92). It understands the perceived need to see the system from 'outside', but acknowledges that any actor hoping to govern inevitably does so from within the system. It describes a need to confront realities of governance such as ignorance, ambivalence, unknowns and side effects, lest problem-solvers unknowingly become problem-producers through the unintended consequences of the actions they take (Voß et al. 2006, Walker & Shove 2007). It warns of the dangers of being disengaged from the "full, messy, intermingled natural reality" (Voß et al. 2006 p5) of problem solving. It also warns of the dangers of entrusting specialists or experts with sole decision-making capability, noting that a specialist mind-set will regard second-order problems as externalities and side effects, rather than as part of the journey that needs to be factored in to reach any kind of resolution.

Ignoring externalities can be particularly damaging if they lead to unwanted path dependencies. Rip (2006) states that path dependency is, to an extent, unavoidable because a system is influenced by what has been done before and may therefore become 'locked-in' to a particular future. That is not to say that there is no possibility for change, just that when circumstances align to produce a stable system it can take major upheaval to change its trajectory (Rip 2006). Smith (2006) describes this as the constraining effect of context. This relationship between past and future is still being explored in terms of reflexive governance even now (Krzywoszynska 2018). There is a humility in this attitude that comes from the understanding of being present in, subjectively aware of, and part of the systems that a governor presumes to govern. Path dependency, if factored in and used for effect, can be productive as well (Levin et al. 2012, Jordan & Matt 2014). Similar to SPT's effect of reinforcing practice through repetition, if a positive pathway can be locked-in ahead of time then it can be a powerful tool.

Governance is considered to be an ongoing process, starting well before any intervention (Rip 2006). Visioning exercises are vital in the attempt to anticipate the likely effects of an intervention. Once the intervention is decided on and applied the

process continues. The governors continue to monitor progress made and apply additional interventions to make adjustments. Treating governance activity as a constant form of knowledge gathering (Sendzimir et al. 2006) is a critical part of the approach. Efforts are constantly being made to react to previously unintended consequences ahead of time. This continuous process is described by Voß et al. (2006 p6) as “the constellation of reflexive problem handling”. This constant, knowingly subjective process represents a significant departure from more traditional governance thinking and a potential step towards an SPT understanding of governance.

Reflexive governance scholars have a history of association with innovative models of social life. The theory is often attached to the MLP (Geels 2002; McMeekin & Southerton 2012; Gottschick 2013), which contends that changes can take place within a hierarchical system of niches, regimes and landscapes. While the MLP is certainly different from, and arguably incompatible with SPT (Hargreaves et al. 2013), this disposal towards accepting and working with relatively new and radical ideas is a point in the favour of reflexive governance theory. There has, however, been documented friction between reflexive governance proponents and SPT scholars in the past (Shove & Walker 2007; Rotmans & Kemp 2008; Shove & Walker 2008). Regardless, practice literature already offers a number of points of connection with reflexive governance thinking. Hargreaves et al. (2013) suggest that managing practices would require a process of constant learning and adaptation. Shove & Walker (2010) were already talking explicitly about more reflexive forms of governance being needed to continually modify governing regimes. Walker & Shove (2007) note the issue of addressing ambiguity in governance practice and reached similar conclusions to Rip (2006) and Voß et al. (2006) regarding the need to be mindful of ambiguity. All attest that focussing too strongly on trying to reduce complications can itself produce externalities and as a result it is often better to deal with a messy reality.

SPT is often faced with the question, from contributors and detractors alike; “If systems are this complicated, how are we to govern?”. Reflexive governance does not shy away from this ambiguity, but embraces it as part of its approach, knowing that governing is a continuous process. Taking this into account, surely the answer then is

that we already knew systems are complicated and did not need SPT to confirm that. Regardless, there is a pressing need to find a means to govern, which can be done more effectively having acknowledged that uncertainty. Reflexive governance represents a promising step forwards in terms of both governance generally and towards sustainability more specifically. It represents a systemic approach to governance and if SPT can rise to address systems the two could be the foundation of a truly novel approach to governance.

2.4 Towards a conceptual framework for reflexive governance of practice

SPT presents a solution to some of the problems set out in section 2.1. These are specifically those of the 'gaps' where current policy interventions fail to take into account the full reality of practices of everyday life, preferring to focus on either technological or behavioural interventions with a tacit assumption that the two will always align with the same intention. Reflexive governance presents a potential solution to some of the incompatibilities that SPT finds with current governance laid out in section 2.2.2. These are primarily that current governing practice not only does not seek to govern practice but actually may not be able to if it continues to understand the nature of both social life and the governor in the way it does. Reflexive governance eliminates the second of these problems with its approach but still does not interface with SPT explicitly.

Reflexive governance carries the systemic and endogenous understanding of the governance that is needed to address practice, but is still basically decisionistic in nature in its current form. As reflexive governance operates cyclically all that remains is to place that cycle within a practice framing. The image below does just that, linking the governing and governed practice together in a mutual relationship or intervention and learning. It is presumed that visioning and anticipation are included within the governing practice and executed before any intervention is initiated. Feedback in this case is information produced by the response to the intervention. While feedback does affect the governing practice, if there is a direct, intentional governing relationship from the everyday practice to the governing practice, then that relationship would be represented by another separate diagram.

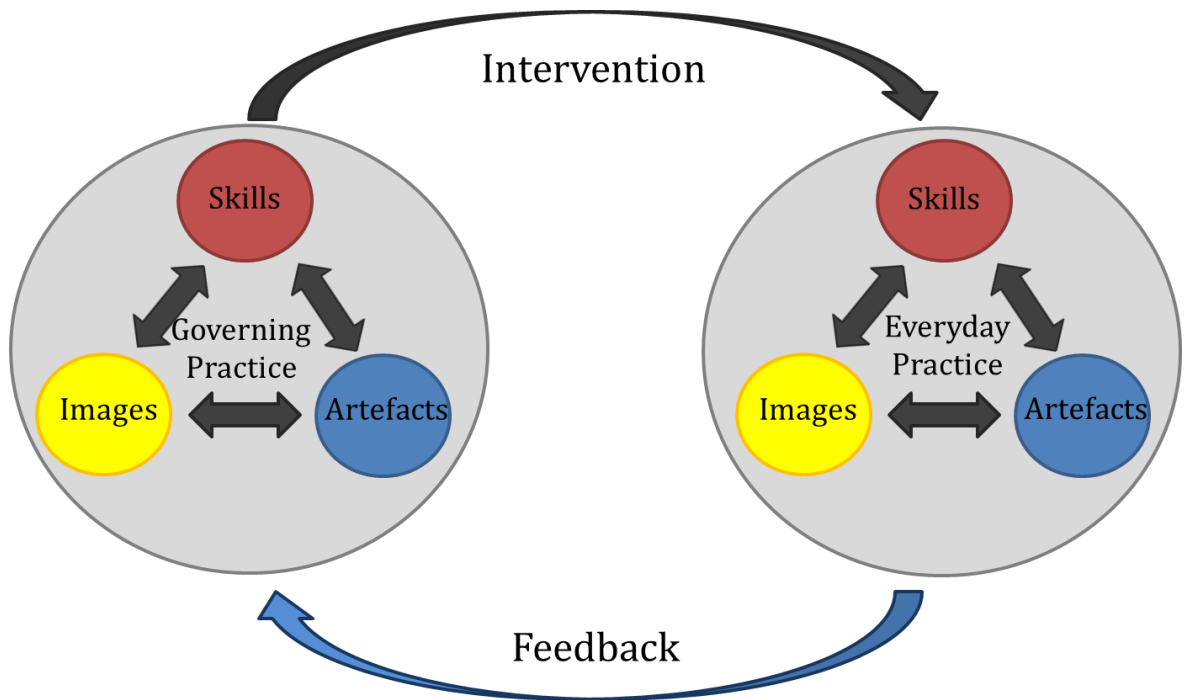


Figure 2.2 Initial conceptual framework for reflexive governance of practice. A governing practice and a governed practice exist within a cyclical learning relationship where they each react to each other.

In this way the reflexive governing practice “maintains the illusion of governance” (Rip 2006 p94) while very possibly being influenced by any number of other practices within a system. Because practices are internally dynamic and constantly interacting with those around them, any attempt to govern them must acknowledge that reality. Governors must also be concerned with learning, continually absorbing information from and reflexively steering this mass of constantly-moving practices. This model clearly makes the case that governing practices are endogenous to systems of practice, with no visual distinction drawn between the governing and the governed. A fitting metaphor for this might be trying to manipulate a ball pit rather than playing pool. The ability to introduce interventions into an otherwise static system is a comforting but inaccurate understanding of what is actually happening.

There is a further distinction between practices aimed specifically at governing rather than those that might govern through a particular relationship. Practices of Governance are defined as practices that carry within them the explicit intention to govern, while governing practices are those which by connection to another practice guide or influence its development. It is the goal-oriented nature of practices of governance that mark them identify them as such. From this distinction comes the second diagram, which better represents the systemic nature of practice

relationships, with both practices of governance and governing practices represented along with the lived experience of everyday practice. This version of the framework introduces a more detailed understanding of the relationship between governing practices, practices of governance and the lived experience that can then be built on and explored over the following chapters.

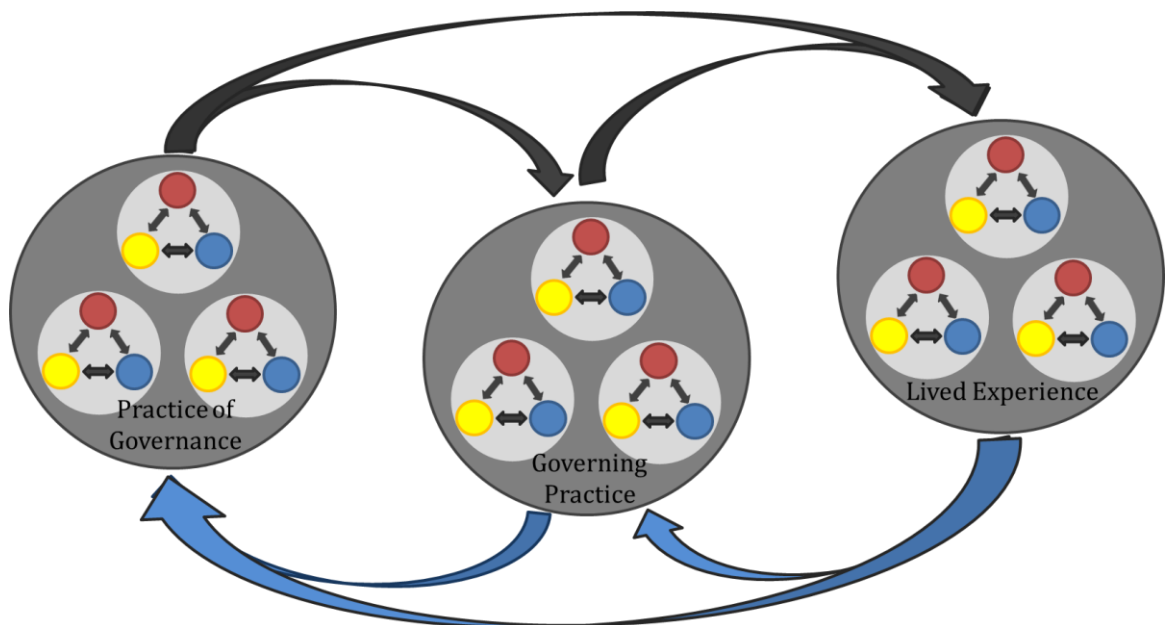


Figure 2.3 Expanded conceptual framework for reflexive governance systems of practice, making a distinction between practices of governance and governing practices.

This framework forms the conceptual basis for the system of practice that will be mapped as part of chapters three and four. Practices are formed into projects (Watson & Shove 2008, Røpke & Christensen 2012) in service of various goals within the system. The relationships between either those projects or particular practices within them highlighted as either black arrow interventions or as blue arrow feedbacks to complete any reflexive cycles. Subsequent chapters will expand on this by further with Chapter five detailing the nature of the connections between practice and Chapter six suggesting methods for how to make the system as a whole more reflexive, increasing the incidence of these cycles of intervention and feedback. Compared to a real system this diagram is a simplification, but it needs to start very simple or the system that evolves from it rapidly becomes incomprehensible. In the same way as the Shovian practice model's elegance belies its potential for describing complex social phenomena, it is hoped that this model can be used to render a system

that is an order or magnitude more complex, intelligible.

2.5 Research Questions

Having constructed a stylized model of a reflexive system of practice as part of the conceptual framework, what is required now is to interrogate it. Each of the following research questions addresses an aspect of that conceptual framework, and when applied to a 'live' system should produce data on how systems of practice are governed.

1. How can systems of practice be mapped?

The first research question poses the challenge of finding and mapping an active system of practice. This is simultaneously a methodological and conceptual question. Answering it is the work of chapters three and four respectively. Chapter three sets out the means to bound and measure a system of practice while Chapter four describes the key parts of that system. The process provides insights into the constituent parts of systems of practice and how those parts relate to each other as well as the complex reality that they represent and that this thesis demonstrates.

2. What are the relationships between practice and governance within this system?

Further interrogating the mapped system specific examples of governance and the interrelations between practice that take place within the system are identified. These are used to generate insight into the ways in which practices form governing relationships. This is achieved in broad terms in Chapter four by demonstrating how components of the system interrelate, govern and create timespaces for subsequent practice. Chapter five takes the interrogation a step further, addressing a series of specific examples of governance within the system to both demonstrate the possible variations in practice relation but also the way in which those moments themselves form a cyclical narrative which is then repeated throughout subsequent iterations of this system. These examples serve to demonstrate the power and versatility of the conceptual framework in describing examples of governance through and between practices on different scales as well as multiple different forms of governance.

3. What are the implications for reflexively governing systems of practice for sustainability?

The conceptual framework represents a simple model for a reflexively governed system of practice. Having applied real world data to it, its nature may have changed and so the question asks how to bring the empirical into contact with the theoretical. This question is covered by Chapter six, in which the nature of what sustainability means at various different points of the system is discussed as well as noting examples of reflexive practice that are already present in the system. The final section builds upon the insights of the previous two to address what a reflexive system of governance based on SPT might actually look like in reality.

Since its inception, SPT scholars' understanding of systems and governance of has grown increasingly sophisticated. This has resulted in a technically accurate, albeit messy vision of how governance might happen, either socially or actively along with potential avenues through which interventions might be applied. What is currently lacking from the discourse is empirical evidence to test the model and gather data in order to refine it further. In addition to more empirical work a greater interaction with current theories of governance should be a priority. Having identified these as the three key questions to be answered by this thesis, the next chapter sets out the methodological justification and approach to answering them. The following chapters will add an empirical dimension to that framework by applying it to a real 'live' system of practice.

Chapter 3: Exploring Systems of Practice

This chapter will outline the methodology and methods used to create the data set, map the system and isolate points of interest within that system for further study. In the last chapter the paring of Social Practice Theory and reflexive governance in order to fill gaps in current thinking produced the research questions for this thesis. In order to address these questions there needs to be an in-depth, exploratory and systemic approach to finding and analysing interactions between practices which then allows the interrogation of what it is to govern that system. Such an approach has not been attempted before.

Having first identified a rationale for a new type of methodology around assessing the effects of governance towards sustainability this chapter introduces the case study being observed, the Blackdale system of practice. It was decided early on that a case study approach was needed to apply sufficient depth of analysis to the system and the Blackdale developement provides fertile ground for insights into the governance relationships around sustainability. Through a mix of participant observation, interviews and documentary evidence the system was mapped and specific aspects of it identified as points of interest. Each aspect is then explored throughout the following empirical chapters.

3.1 Rationale: Towards a case study of a system of practice

Dominant methodological approaches to the study of sustainable building take two forms. Methods tend to focus on either measuring the behavioural outcomes to a given intervention or the technical effects of the same, measured through technology. These approaches have their uses but do not provide the necessary tools of viewpoints from which to investigate a system of practices and so a new approach is needed.

Behavioural research methods for monitoring interventions focus primary on individual reactions to or changes in cognition or behaviour around the effects of an intervention. These might include surveys (Poortinga et al. 2013), structured

interviews (Whitmarsh & Corner 2017) and diaries (Croome 1990). These are well established methods for gathering social data for analysis but they often focus on the outcome of an exogenous intervention rather than interrogating the process through which that outcome is achieved. Being behaviourally based focus is often placed on the individual, assumed to be operating within an otherwise static system. This linear thinking, from given cause to single effect to be measured is too simple for the study of systems of practice.

When studying technological interventions there is a tendency to utilise more technology-based methods of data production in order to assess sustainability outcomes of construction through a set of technical criteria. They might include measuring uptake rates of new technologies, measuring the 'performance gap' between the design specifications (Cole & Wright 2003) and actual outputs, or looking for increases in energy and resource efficiency (Finnveden & Moberg 2005) and by extension carbon output. The focus on outcomes is understandable but suggests a misunderstanding of the dynamic and interactive nature of socio-technical systems. It represents view of how social life is influenced that is much too reductive and linear to be useful when applied to practice. Additionally, the measuring of an established performance gap suggests a certain surrender to its existence and thus a fundamental mis-match between intervention and outcome. This is something that needs to be addressed moving forwards.

“Taking ‘practice’ as a central conceptual unit of enquiry generates a range of distinctive questions. The choice of methods depends on which of these questions you want to take up and pursue.”
Shove (2017)

Social Practice Theory's (SPT) understanding of dynamism within systems of practice suggests the need for a new approach and the quote above is a testament to its capacity to generate new insights. This approach needs to be able to explore the system in more depth with note being taken of interactions with its many different parts. Rather than an experiment this work is the result of observing an ongoing system in flux. It acknowledges that the system existed before, and elements of it continue to exist as you read this. It also includes a certain amount of traditionally

gathered data such as post-occupation surveys, BREEAM ratings, and energy data gathered during testing and occupation as part of itself. These produce data used by practitioners to measure the success of the development against its own criteria but for the purposes of this work the practice of gathering that data is itself the unit of observation and the data is only used to confirm conclusions drawn elsewhere. Indeed the very focused viewpoint offered by the more traditional approaches leaves out much of what it is that comes to form the outcome of the system, seeking only to measure “success or failure”. The focus on specific data has obvious value in its own context but it is not enough to give a vision of the system involved. While it is useful that that data is also carried within the system, because the system is the object of study these methods are not enough.

SPT studies tend to be more interpretive in nature, focusing more on descriptive methods (Gram-Hanssen 2011) and historical analysis (Spurling 2018), to produce detailed accounts of the ‘lives’ of practice. These types of methods better capture the types of socio-technical linkages needed but are not beyond critique themselves as practice methodologies around interacting with systems of practice remain either under-developed or entirely theoretical to date. Schatzki (2015) theorised about the nature of “large social phenomena”, Watson (2012) suggested that getting to grips with systems could be valuable and Nicolini (2016) went so far as to describe practically addressing relations between small and large scale phenomena as an issue of practice theory remaining relevant. All of these address the need to study systems but themselves interface with them in the abstract. Meaning the writing around them does not need the methodological backing to bring conclusions. There is nothing inherently wrong with this but it is a niche this work intends to fill.

Some work has been done on interfacing directly with systems of practice which this work can begin to build on methodologically. Schatzki (2011) described the process of constructing arrangements and bundles of practices into large social phenomena from their visible assets. Higginson et al. (2015) deployed a system for mapping the elements of practice through a digital networking approach. Macrorie (2016) developed a systems of practice approach using, diaries, audio tours, participant observation and discursive games. These served to produce the in-depth dataset required to understand a system and allowed the research to go some way towards

mapping the relations within the system. However because this was not the methodological focus of the fieldwork it resulted only in an *ex post facto* vision of the system and could not have resulted in the creation of a system map in the way this work did. Taking into account these critiques then what is needed is a method to bridge the gap between the granular detail of practices and the more abstract methods emphasising the systemic nature of practices as being inherently connected to those around them.

The guiding philosophy of this work is that it is approaching something new, in a new way. There is no established methodology for approaching systems of practice and as such it uses methods that have been used before in SPT work but not to address a system of this scope. With a more systemic and constructivist approach than previous efforts, and taking the central artefact of the Blackdale buildings as its focal point the system can then be constructed as a case study based on interactions with the artefact or, more frequently practices associated with it. It is also more performative in that what is being focused on is the doing of things rather than the reporting of them. With that in mind the process was reflexive and iterative, being able to follow sources of data from one participant to another and evolving through several different visions as it was being shaped. Without knowing exactly what there was to be understood within the system it was impossible to fully anticipate all outcomes. Taking this into account it seems that a case study is needed. This will not only allow for the observation of a system of practice being performed in situ but provide proof of concept that such a thing can be done.

3.2 Finding and Introducing the Case Study

3.2.1 Identifying a Suitable Case Study

Abercrombie, Hill, & Turner (1984 p34) define a case study as:

“The detailed examination of a single example of a class of phenomena, a case study cannot provide reliable information about the broader class, but it may be useful in the preliminary stages of an investigation since it provides hypotheses, which may be tested systematically with a larger number of cases.”

It is apparent there are many advantages of a case study approach for this study of a system of practice. Case studies allow an intensive, in-depth look into a system over a period of time and more specifically, as it evolves. It offers a great ability to understand from inside, rather than as an outside observer. Case studies are also inherently explorative and as such are useful for producing new insights, either within existing paradigms or as an empirical basis for a new one. All of these attributes make a case study an ideal way to approach studying this type of system. Cases studies come in a number of forms, dependent on what it is they are intended to showcase (Flyvbjerg 2006):

Types of case study	Definition
Extreme/Deviant	Unusual cases representing either an ideal or a worst case
Maximum Variation	Finding multiple cases to observe differences in outcomes based on particular circumstances within cases
Critical Cases	Allowing logical deductions along the lines of “If X is not valid in this case, X is not valid”
Paradigmatic Cases	Serving as a reference point for new schools of thought.

Table 3.1 Types of case study, taken from Flyvbjerg (2006)

Because of the novelty of a systems of practice approach as both a concept and an approach the fieldwork for this thesis takes the form of a paradigmatic case study. A paradigmatic study is built around something new, intended to be one of the first examples of its kind that can then inform debate moving forwards. It is valuable as a case in that sense alone, if nothing else. Taking the definition used in the literature review, being a “collection of components connected in relation to a particular function” this case focuses on the practices involved in the creation and lived experience of the Blackdale development. The generative question for this case and its selection was to find a system that demonstrates “governance of social practice for sustainability” and there were several possible options from the start.

Initially the subject of the case study was going to be an initiative at the University of East Anglia (UEA) called “Green Flats”. The Green Flats project was based on an innovative behavioural experiment aimed at placing environmentally minded individuals into otherwise standard accommodations together in order to assess the impact on resource use that grouping likeminded students might have. It started with the network of Green flats and moving outwards to a number of other sustainability efforts within the University under the umbrella of “Sustainable Ways” run by the Estates Sustainability team before moving outwards to look at the wider university structures that governed elements of the case study. Having anchored the system at that point there was then scope to expand that context into other practices or systems of practice that might be influencing the practices of residents outside the scope of the project. What might have appeared initially to be an attempt to simply apply a practice lens to a behavioural intervention similar to Hargreaves (2011) or Dillely (2015) in fact aimed at linking practices of habitation with the expansive systemic context that affects those practices rather than the simpler parameters of the experiment.

Using the well-understood starting point and expanding that out into a system of practice was the attraction of using Green Flats. The focus on connections in practice through systems of practice represented the novelty of that case and that was highlighted during the upgrade workshop prior to entering the field. Another of the key points made during the upgrade workshop questioned why the focus on this type of intervention when surely actually building greener flats would have been a more

effective intervention. This is a fair question and one that is being addressed by the University, first in the form of the sustainability exemplar project, Crome Court, which won a number of sustainability awards. Unfortunately, after months of gaining access to, and familiarisation with the Green Flats project a problem occurred. Immediately after being authorised to begin fieldwork a restructuring of the Estates division meant that the Green Flats based project was no longer a viable case study and a new case was needed.

Thankfully, in part due to the ongoing process of moving from Green Flats to simply greener flats, the Blackdale site was currently under development as a successor project to Crome Court. The two were strongly linked through codified learning practices that themselves became important parts of the Blackdale system and continued to inform construction efforts on the campus after it was completed. The Blackdale case study offers a much more systemic view of what forms sustainable accommodation, than Green Flats could have, along with the incorporation of both the social and the technical aspects of sustainability. It involves every aspect of the construction as well as occupation by carriers of practice once completed and the more strategic forms of governance that influence the system.

Capitalising on the work that had already been done and informed by contacts made during the early stages of Green Flats within the estates division a new case study representing this potentially more complete answer the generating question became available. While the Green Flats project was framed around an explicit intervention the Blackdale development represented a much better means of showcasing the utility of SPT by emphasising that any intervention into a system is an intervention in practice and its impact deserves scrutiny.

While the system is centred on the UEA campus and the Blackdale site it recruits practices from much further afield. Where a normal case study might take the physical area as being the key point of focus this case needed a more multi-sited approach which required the seeking out of practitioners that were spatially removed but whose practice manifested on the site including designers, engineers etc. As well as extending in space the impact of the development on the systems of practice around it extend significantly in time. The arrangement of practices leading to its

inception and that were then subsequently changed by its presence, the legal and regulatory frameworks informing its production as well as the effect it had on campus life post-occupation all come within the scope of this work, in at least the sense that they influence the system.

Having presented itself, Blackdale was enormously convenient as a case study given that it was nearby. The physical proximity of the main site is largely a function of the process of finding the case but at the same time is vital to its execution. With that being said, systems of practice occur everywhere and are never actually happening in only one location. Aspects of Blackdale are as present at UEA as on they are on the internet and as they are in London or in Norwich. Systems of practice are both situated and distributed, and as such they are by definition taking place at all times and in virtually all places within their bounds. Theoretically, the methods expounded within this chapter could be applied to any starting point and it would still lead to the production of a mapped system of practice.

Blackdale is explicitly a development aimed at creating a 'sustainable' space but within a system that demands much more of it than just that. It offers an excellent opportunity to assess the implementation of sustainability throughout a system of practice. Rooted in that implementation, it offers a chance to study the governing factors behind this one particular aspect of policy.

Having assessed Blackdale as a positive example of a case study, an initial introduction was required. It came in the form of a meeting with the primary governor of the system who was both enthusiastic about the project and a central point from which to move outwards and map the rest. Critically he was also open to and invested in exploring new types of thinking, which when dealing with industry actors as an academic, is by no means a given. Because initial contact was from a governance point of view it granted access, but also provided a strategic viewpoint on the system immediately. This facilitated exploration of the system in practical terms but also gave an early indication of its scope which was invaluable for the mapping process. Access was greatly facilitated by already having inhabited elements that same system and encountered some of the practitioners involved previously. An

understanding of the University's structure and approach greatly facilitated access as well as a deeper understanding of the nuance and context of participant responses.

During the initial meeting much of the system was already described, key elements that would go on to become significant parts of the system of practice were defined at that early stage. The University has a long-standing history with the sustainability agenda and it was clear that that was a guiding factor in construction. There were signs from this meeting that the system was functioning well and since much of that seemed to be down to the reflexive practices being employed by management that made it more attractive too.

3.2.2 Introducing the Case: The Blackdale System

The University of East Anglia is a UK higher education (HE) facility, founded in 1963, with a campus spanning 356 acres, an operating budget of £260M (UEAb 2017) and a population of around 18,405, 15,058 of them students (UEAa 2018). It is famous for its world leading environmental science school, its focus on interdisciplinary and its commitment to sustainability within itself. It hosts a number of globally noteworthy research groups such as the Climate Research Unit (CRU) and Tyndall Centre who are responsible for important contributions to the IPCC (CRU 2012). UEA recently won the Queen's Anniversary Prize for Higher and Further Education for 50 years of ground-breaking environmental science work (UEAa 2017). UEA was among the first UK universities to embrace interdisciplinarity in environmental and climate science shortly after its inception as a university. It is now a world leader in not just research and teaching on purely environmental science issues but on a variety of more socially based applications of environmental science leading to ground-breaking work like this.

On a more operational level the University is answerable to the Higher Education Funding Council for England (HEFCE) for £31M (UEAb 2017) of its funding and as such carries a legal responsibility to reduce its carbon footprint relative to 2005 levels in accordance with the UK Climate Change Act (Royston 2016). In direct competition with this top-down ambition to reduce emissions is the need to continually expand as a profit making corporate entity (McCowan 2012) which means that the University as a whole is undergoing a significant expansion in terms of both

its student body and the campus to accommodate the housing and teaching requirements of new intake. The two combined forces have led to a focus on high quality, sustainable buildings on the UEA campus.

Compounding and adding to these forces is an issue of aging infrastructure. While aging infrastructure is common problem within the HE sector UEA has a particular relationship with it. Built up rapidly in the early 1960's the now internationally famous brutalist architecture of the UEA is in large part in need of refurbishment. This is complicated by much of the original infrastructure being Grade II listed by Historic England (2018). The need to secure funds ahead of the massive refurbishment efforts drives much of the push towards increasing the student population in order to increase profits but it also drives ever increasingly more efficient construction in new builds to house the increasing population. Due to the age of the original buildings but also due to their aesthetic design these listed buildings also constitute a huge drain on the University's operational budget in terms of energy due to being extremely inefficient. All of these factors combine to mean that sustainability is a key part of the UEA's identity and operational practice but also that it manifests in a number of different ways and through different processes making this an interesting case study.



Figure 3.1 Three Grade II listed landmarks of the UEA campus. Left, the Sainsbury Centre for Visual Arts. Centre, The Lasdun Teaching Wall. Right, Norfolk Terrace Ziggurat Halls of Residence

University decision-making practices are impacted by the HEFCE policy around the funding of university moving towards an increasingly neo-liberal model. This in turn drives the University's vision and understanding of what it aims to be into the future towards an increasingly revenue based model. This has led to a series of ever

more efficient buildings being built on the campus partly as a reaffirmation of a commitment to sustainability and the University's long standing reputation as a leader in the field but equally for reasons of life cycle costs.

Building	Complete date	Purpose	Accolades	Additional Information
Elizabeth Fry Building (E.Fry)	1995	Teaching/ Administration/ Research Staff offices	"Best Building Ever" (Standeven 1998)	Developed using a precursor to the Soft Landings process. Still exceeds current building regulations for efficiency.
Zuckerman Institute for Connective Environmental Research (ZICER)	2002	Interdisciplinary research space/ Administration/ Recently converted to teaching space	"Low Energy Building of the Year" Building Magazine's sustainability competition (2005)	Integrated solar array on the roof and improved thermal performance from E.Fry building.
Thomas Paine Study Centre (TPSC)	2009	Teaching space/ Staff offices	-	Displacement ventilation system. Utilised information from ZICER and E.Fry
Julian Study Centre (JSC)	2013	Teaching Space	A rated Energy Performance Certificate	Cross Laminated Timber (CLT) Structure
Crome Court	2014	Accommodation	Won 'Built Environment' categories at EAUC Green Gown Awards (2015) and Guardian Sustainable Business Awards (2016)	Innovated the use of a 'Green Wall' as well as making extensive use of the BIM process to maximise efficiency of the final build
Enterprise Centre	2015	General purpose meeting space/Business development space	Winner of 25 different local and national design and workplace practice awards and finalist for a further 5 Achieved both Passivhaus Standard and BREEAM outstanding	Exemplar project. Still the most sustainable building in the UK and designed for a 100 year lifespan. Uses exclusively local, sustainable and recycled materials and employs design decisions specifically aimed at the practices carried through the structure
Hickling and Barton Houses (Blackdale)	2016	Accommodation	BREEAM Excellent (Appendix 8)	Massive project and highly successful in its own right, taking elements from the rest of the UEA Built environment

Table 3.2 Recent history of the UEA built environment

The Blackdale development is not simply an intervention into a system but it is itself a product of the built campus, the processes used to create it and the forces that govern the operation of that campus. The study of the Blackdale system is only the study of an intervention in the crudest possible sense. While it is a, largely technologically based intervention made with the partial goal of influencing the behaviour of its residents the actual focus of the study is how the system as a whole forms and reacts to that intervention.

The actual Blackdale development began in June 2015 with the design process beginning in March of 2014. It was completed and handed over to the University in September 2016 ahead of occupation in October. The final product consisted of three buildings located on the very easternmost edge of the campus towards Norwich City Centre. Hickling House houses 25 student flats and Barton House has 26, many of which are given over to international or post-graduate students. Between the two there are 518 rooms with four of those allocated to Wardens, who provide pastoral care to the residents of their respective buildings. In the central 'canyon' between the two is a two storey building, housing a laundrette, operational staff and initially a café and social space. Though the café was shut down relatively soon after occupation due to lack of use.



Figure 3.2 Architectural design image made LSI Architects. Left, Barton House, Central building and Right Hickling House

These buildings represent Phase 1 of the Blackdale development as there was always intended to be a second construction phase which would extend Hickling house significantly, adding many more rooms. Currently Phase 2 is awaiting funding.

One of the key sensitising questions for the interview participants was “Is this a sustainable building?”. The answer to that question is largely dependent of what point in the system it is approached from but ties in closely to the idea of success. Blackdale was a ‘sustainable build’ in that it achieved the sustainability goals it had aspired to. If not strictly speaking an exemplar it drew direct influence and followed on from several local exemplars such as Crome Court. Ironically, the area where it scored most poorly for BREEAM certification was innovation, since it used materials and lessons learned from the rest of the campus. It is however and exemplar of that process of learning and reflexive practice and that has been directly attributable to its success. It utilises both the Soft Landings process and Building Information Modeling (BIM) to great effect and took the same time to build as Crome Court, despite being twice the size. It has a solar array on the roof, it uses displacement ventilation which eliminates

the need for artificially stimulated airflow around the building it uses CLT as its primary structure. All of these are elements of previous practice, already present within the UEA system of practice.

As noted the development was lauded as a great success. The ability to see, in practice what performative success means in terms of this system rather than just the opinions of those involved, who would probably have claimed success regardless is a key contribution of this method. The success of the project adds value to the findings because the system achieved the goals it set out to achieve. This allows a much more robust critique of the system and the sustainability work within it. Any aspect of sustainability lost from the system during its evolution could not be said to have been lost due to misfortune but as a function of an apparently successful endeavour. This robustness aids in its value moving forwards, forming a benchmark for other analysis later.

The Blackdale system makes for an excellent case study for this thesis because it contains many aspects reflective of both the systems of governance approach and different instances of governance. It is both a product of the system around it and an intervention into that system. As a large scale residential project it offers the opportunity to interrogate not only a wide range of practices concerned with construction, regulation and governance but also its nature as a residence allows the observation of how those practices inform and shape the lived experience of building. The ability to analyse over-arching governing structures, specific targeted projects and the more undisciplined practices of everyday life captured within a broad but focused area of both space and time makes Blackdale an ideal candidate to test the systems of practice model.

3.3 Mapping and Exploring the Blackdale System of Practice

Having said in section 3.1 that a case study is fundamentally an act of exploration this section sets out the process through which it was explored while the next goes into specific further detail on the methods used to achieve this. Having identified and gained preliminary access to Blackdale as a case study the construction process was at this point well under way and there was no time to lose. The system needed to be

explored, bounded, and mapped before it could be meaningfully analysed and this process took place in four main phases.

3.3.1 Phase 1: Defining and Bounding the Case

The first phase was the process of finding out what there was to know. It began by setting the object focus, the Blackdale development, which was at this point centred on the construction site. This done the next stage was to identify the self-evident governors, the first of which, was the project administrator who provided not only access to the system but authority to interrogate it and a strategic overview of the timeline, governing relationships and practitioners that it encompassed. From that meeting two more governors emerged, the first was the Deputy Dean of Students who is essentially the client for the entire project on behalf of the University and the senior planner who represents the more governmental aspects of governing within the system. Each governor, in addition to an initial interview was given a brief ego-mapping task to complete. They were allowed to complete the task in any way they saw fit but the basic brief was to draw connections between themselves and other parts of the system as they saw it, with those connections being defined in terms of practices.

The object of this process was to establish the extent of the system around Blackdale. It was never going to be a comprehensive map of the system but the ego networks gave an invaluable early insight into what the system was, and what was where within it. They also gave an indication of boundaries to the system. One of the main problems with systems of practice in theory is that since everything is connected through time, space and practice the system does not have an edge. This means that without setting boundaries on a system of practice the practices and connections could continue to expand outwards until reaching the extent of human experience.

In practice the boundary for this system is found in the UEA and HMG blocks which are both indicative of entities that were known to exist and interacted with the system but were on the very limits of the available data. Indeed the available data was in effect what finally produced the limits of the Blackdale system. The ego mapping process allowed the scope of potential data to be explored and once that dataset was created it was organised for analysis into the projects of the system. Those projects

are then arranged around the nominal centre of the system, the Blackdale development, and visually mapped in such a way as to describe their relationship to it. By anchoring the system loosely around the practices found within the ego network provided and strongly into the artefact of the finished buildings it was possible to bound the system while arranging it in such a way as to effectively describe the dataset.

3.3.2 Phase 2: Populating the System with Practices

Having defined a basic structure for the system and with a list of practitioners to interview the next task was to put some more practices into the system. This is the point where fieldwork began in earnest. This phase involved exploring the system in much greater depth and observing the practices in situ as they progressed. Those interviewed at this point were primarily professionals who were responsible for construction, design and the administration of the Blackdale site. There were secondary groups of sub-contractors as well as regulators, clerks and observers who also contributed professional practice to the system. This phase and the next were where the great bulk of the interviews took place as there were the largest numbers of practitioners involved.

While the initial design phase had been completed some months before fieldwork began and construction was nearing its final stages many of the design practitioners were appearing back on site to inspect or 'snag' the results of their work and so this was a great opportunity to assess how the more strategic and ground-level practices interacted through time as well as space and practice. During this phase much of the reflexive practice that came to define the system became evident. Those responsible for managing both diverse groups of practitioners and occasionally conflicts between client and contractor exhibited already much of what would be expected from a reflexive system in addition to carrying some of the more codified reflexive management practices like Soft Landings.

From this diverse range of different professional practices another order of connected practices emerged. Consulting professional practitioners allowed influences from professional bodies like the RIBA and the RICS to be identified and placed into the system. In most cases, these are examples of chartering organisations

and as such were providing a baseline of professional qualification for the practitioners involved but in some cases their influence was noted to be ongoing, with continual assessment or professional training updating knowledge as legislation requires.

3.3.3 Phase 3: The Lived Experience

This phase represented a sort of temporal book-ending of the development. The practitioners being interviewed during this phase were split into two, the residents of Blackdale and the “Stakeholder” group. These are carriers of practice with a stake but not a hand in construction. They were mostly those responsible for the management, administration and monitoring of the completed buildings. They included members of the University accommodation service, cleaning staff, campus secretary, maintenance and members of the estates team concerned with energy provision and monitoring. Many of these practitioners had been involved in consulting early on in the design process and now had taken ownership of the finished product. While the residents inarguably occupied the buildings themselves when thinking in terms of practices these inhabited the buildings every bit as much as those living there.

Interviews with residents allowed an interrogation of the ‘output’ of the system, the student experience. The experience of living in the buildings was a key issue during the design phase and remained a driving force of the building management practices taking place post-occupation. Residents interviews were structured a little differently as they were experiencing an outcome, temporally speaking, viewing the system end-on rather than being involved in its evolution. Of course, they are involved and their practices exert a huge pressure on the system both now, and moving forwards but the exact relationship between student life as it is experienced and the “Student Experience” as it manifests within the University’s evolving policy is a subject requiring a great deal of analysis.

3.3.4 Phase 4: Focusing on Sustainability

Having by this point explored the system it was necessary in places to apply a little more scrutiny in order to be able to more fully answer the research questions, specifically those around sustainability. Sustainability had been a key part of the investigation of the system from a research point of view but when questioning

professionals on their everyday practices it was not always expressed in a way that did the subject matter justice. During the mapping process certain individuals were identified as being engaged or responsible for sustainability within both the system and the wider university and so a last set of interviews was organised with them in mind. These formed a bridge between what was strictly fieldwork and what was looking towards analysis. As described in the following sections this process, from fieldwork to write-up was continuous and iterative which makes it difficult to draw clear delineations between them.

The intention was to more specifically interrogate what factors influenced the trajectory of the practices carried towards sustainability or not. There was also an examination of the practices of governance involved, whether they consist of the more traditional meetings, monitoring and reporting or the technological optimisation and Building Management System (BMS) approach. The interviews themselves were generally longer as well as being much more free-form and conversational in order to be able to pursue topics and explore sustainability and how it interacts with the system. These interviews were invaluable in disentangling the various ways in which sustainability manifests itself as part of practice, from the social, to the economic to the strictly environmental and in between them all, the maintenance of the current paradigm which represents a significant threat to efforts towards environmental sustainability.

3.3.5 Summary: Mapping Systems of Practice

As might be expected, hand in hand with the exploration of the system came the process of mapping it. The mapping process formed a key part of both the fieldwork and the analysis as it represented both the data and the evolving understanding of how the expanding dataset was connected. The maps being created evolved from a more recognisable actor network or management structure to a more distinctly practice based visualisation of the system. This in itself represents some of the novelty of this work though the map is largely relegated to a backdrop upon which the specific areas of analysis play out.

The first set of maps were created during phase one and because they were formed from the amalgamated ego networks they represented actors, acting. Given that this

is how the actors, and the system saw itself, this is to be expected but an SPT approach demanded more. During phase two and three, as well as the onsite fieldwork the focus became more on governance and so the map became a series of boxes of practices connected by strands representing particular governing practices. Phase three saw the transition of the system from one of driven creation to one of stable habitation, extending the map both in time and in space.

Having created the dataset and reoriented the map away from actors towards practice a problem presented itself. Certainly in the case of the second map, sustainability does not feature in the system. It was partly this visualisation that drove the need for phase four interviews but more so the theoretical understanding that sustainability is not a practice, it cannot be 'done' as it is simply an attribute or effect of practice. Phase four was intended to give greater emphasis on where and how sustainability featured in the system of practice.

Being both paradigmatic by nature and iterative in production this map is by no means definitive, and probably never could be. Practices are dynamic by nature and so any two dimensional representation of such a system is prone to inaccuracy from any given time to the next. By trying to tread the line between granular detail (Higginson et al. 2015) and abstraction (Schatzki 2015) the final map manages to be both visually confusing and overly simplified. In the end, focusing on the connections between practices or groups of practice is what shapes the system. This focus on connections also opened up the ability to interface with elements of the system where either access was not granted or simply could not be acquired in time by relating those elements to the experiences of practitioners within the system. Given its grounding in the data it possesses the capacity for either zooming in, or out (Nicolini 2012) but in doing so one would vastly change the aspect and scope of the finished map.

It is hoped that, because of its relative simplicity and its grounding in the doings of things without too much focus on individual practice that it should be intuitively useful to wide audience. The partiality of the final outcome, being a synthesis of the expressed practices of the system should also aid in the universality of understanding around it. With that being said, being the product of many viewpoints and voices it

may be that it does not represent what any individual actor sees as being their part in the system and indeed any way one slices a system of practice will result in something that might look similar to this but operate very differently (Watson 2012, Schatzki 2016). This fundamentally is a researchers eye view of the system and it has been constructed as such but any other observer might also have constructed it differently with no loss of validity but with a different understanding of its operation.

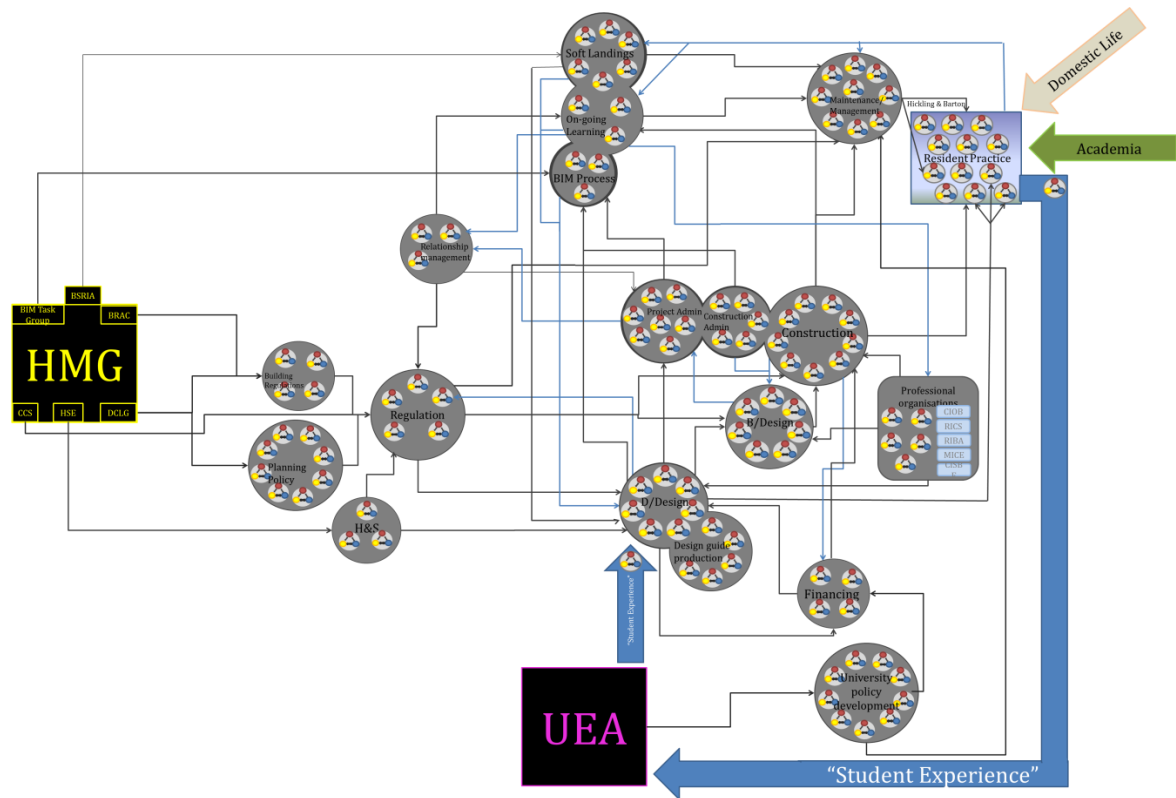
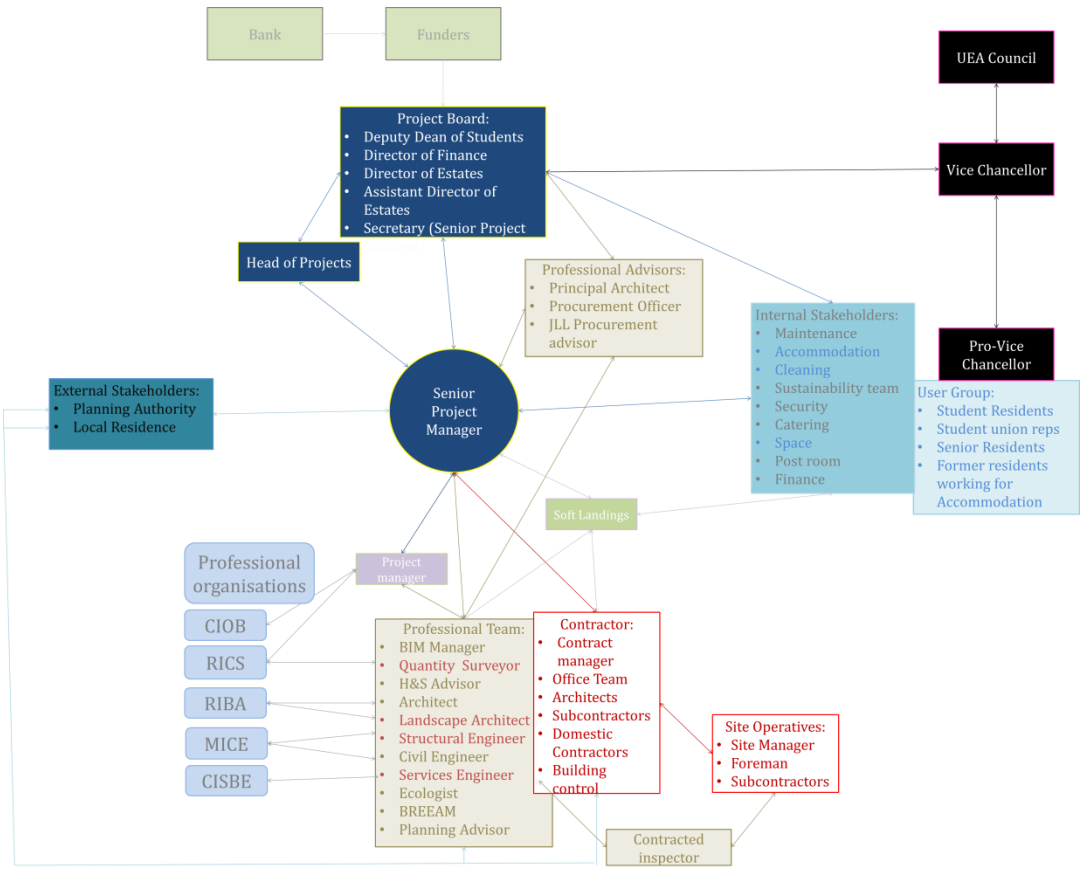


Figure 3.3 Paired representation of the Blackdale system as represented by the initial actor centric network map and the final system of practice map (Appendix 1).

3.4 Methods

Data was produced through semi-structured interviews and in situ participant observations. Documentary evidence was collected concurrently with this process as opportunities presented themselves and was used to supplement and enhance the dataset. The raw dataset was produced over a period of 17 months. This included 58 interviews, two months of on-site participant observation, collection of documentary evidence and observation of meetings between key practitioners. Between them these provided data spanning the length of the Blackdale development in terms of time from its early inception to the last post-handover meeting which took place six months after completion. Direct observations were undertaken towards the end of the project up to and including the hand-over process as construction had begun some months earlier while the focus of this work had been the Green Flats project.

3.4.1 Semi-Structured Interviews

The primary means of data production for fieldwork was 58 semi-structured interviews, totally over 43 hours. Due to the exploratory nature of this case study semi-structured interviews are an ideal tool because they combine the focus of an interview protocol with the flexibility to deviate from that structure if the need arises. Structuring of interviews is useful because they make it easier to compare answers between participants. Since that kind of analysis was not specifically required the semi-structured approach was adopted to produce the qualitative data needed for this work. While often useful for exploring phenomenological data around participants' experience the more flexible approach of these interviews aids in providing context around the core subject of those interviews, the participants practice.

Critiqued as an overly common go-to method in recent years (Crang 2003 p496) semi-structured interviews are none the less well suited to this kind of work. They allow a great deal of flexibility and focus in reaching the desired goal of the interview. This is particularly useful when, as Bernard (2017 p164) notes, you 'might only get one chance to produce data' from that source. This is relevant because in this case many of the interviews were targets of opportunity, taken during the observation portion of the fieldwork who may only have been physically present for a matter of hours. As a method they align well with the other primary means of data capture,

participant observation in that they allow the production of much more specific data as well as more intensive methods of recording that data to be ethically allowable. The ability to electronically record and store responses was invaluable and would not have been available if the approach had been less interrogative. They align well with the overall methodological philosophy of this work in that they both exploratory and inherently constructivist (England 2003). While neutrality is impossible the co-constructing of multiple perspectives across various aspects of the system of practice, cutting through hierarchies and power dynamics, allows for a more rounded view of the systems function.

Given that interviews are methods generally associated more traditional behavioural approaches there are issues with applying them to practice. Hitchings (2012) acknowledges that using interviews can be problematic as they do not explicitly deal with unthinking forms of embodied practice but does state that talking about practices is a valid way to produce data about them. Practice may be, to an extent, unconscious but its instantiation requires practitioners (Shove et al. 2012). Images and meanings are intuitive mental phenomena and the conversational aspect of semi-structured interviews allow the researcher to clarify what is needed from the participant when asking about practices without getting bogged down into theory. Indeed it serves the method to not focus on the theoretical implications of SPT. Unless they asked for details the participants were simply reminded that their doings and the connections to others doings was all that was being asked of them. Finally, taking the definition of a system as a collection of elements engaged in a function the professional practitioners are only connected to the system's function through their professional practice and as such engaging with the individual presents no great theoretical peril since they can be taken as a proxy for their practice in this case. In the case of residents' interviews this was less evident but the questions still focused on connections with the system outside of their accommodation.

In this case particularly semi-structured interviews were useful in that they allowed a relatively relaxed meeting in which participants are free to reflect and explore the concepts needed. At the same time the universal understanding of this particular practice means that the participant, who has generally been primed ahead of time through their invitation to interview also has time to reflect upon their practice and

prepare a little what they wish to say beforehand. This both increases the likelihood of the interview being a full expression of the participants practice but also means they are less on-the-spot in terms of requiring answers. Similarly the ability to plan questions ahead of time reinforces the apparent professionalism of the interviewer which in turn grants a certain authority to be able to probe for more information during questioning.

Participant	Phase	Times	Dates
Projects Team Manager/Project Administrator	1	-	26/04/2016
SL Manager	2	00:17:15	07/05/2016
SU Welfare, Community and Diversity Officer	3	00:07:10	03/06/2016
External Project Manager	1	00:46:35	07/06/2016
Deputy Dean of Students	1	00:49:58	16/06/2016
Senior Contract Manager	2	00:34:10	24/06/2016
Senior Surveyor	2	00:35:33	24/06/2016
Principle Designer (Structural Engineer Aecom)	2	01:00:12	06/07/2016
Architect (Partner, LSI)	2	00:58:35	07/07/2016
Senior Resident Tutor	3	01:02:22	13/07/2016
Senior Site Manager	2	00:21:43	18/07/2016
Mechanical Site Manager	2	00:18:21	21/07/2016
Project manager MEP	2	00:22:46	22/07/2016
Electrical Supervisor	2	00:20:42	22/07/2016
Contractor-side Project Lead / Technologist (LSI)	2	00:57:38	25/07/2016
BIM Manager	2	00:49:49	25/07/2016
Clerk of Works / Inspector for Building Services	2	00:45:38	26/07/2016
Projects Team Manager/Project Administrator	1	02:19:57	01/08/2016
Senior Planner Norwich Town Council	1	01:05:57	09/08/2016
Senior Design Manager	2	01:08:38	24/08/2016
Senior Architect (Client side)	2	00:30:34	26/08/2016
Environmental Management System/Waste & Water Manager	3	00:28:53	31/08/2016
Assistant Site Manager	2	00:30:28	02/09/2016
Space Manager	3	00:31:52	02/09/2016
Secretary	2	00:35:58	05/09/2016
Head of Security	3	00:42:12	07/09/2016
Head of Energy and Utilities	3	00:35:58	13/09/2016
BMS Development Manager	3	00:42:59	14/09/2016
Facilities Support Manager	3	0:27:59	21/09/2016
Environmental Officer/Sustainable Development	3	0:42:29	22/09/2016

Manager			
Head of Engineering and Infrastructure	2	00:34:24	23/09/2016
Finance and Procurement Manager	2	00:36:15	23/09/2016
Post and Portering Manager	3	0:36:11	23/09/2016
Maintenance team coordinator for Accommodation	3	0:50:53	04/10/2016
Civil/Structural Engineering Director	2	00:34:22	05/10/2016
Building Control Surveyor	2	0:35:39	07/10/2016
Head of Security and Campus Support	3	00:46:00	11/10/2016
Administrative assistant for Catering	3	00:37:02	11/10/2016
Mechanical and Electrical Monitor (Client side)	2	00:36:50	13/10/2016
Project Quantity Surveyor	2	01:18:04	13/10/2016
Head of Accommodation	3	01:26:59	18/10/2016
Resident 6M	3	00:30:56	23/11/2016
Resident 11FI	3	00:44:53	24/11/2016
Resident 3FI	3	00:55:57	24/11/2016
Resident 9MI	3	00:53:37	25/11/2016
Resident 20M	3	00:53:33	29/11/2016
Resident 12MI	3	00:42:27	29/11/2016
Resident 1M	3	00:53:08	30/11/2016
Resident 15M	3	01:02:26	01/12/2016
Projects Team Manager/Project Administrator	4	00:25:38	05/12/2016
Resident 13FI	3	00:55:57	05/12/2016
Resident 18F	3	00:54:32	07/12/2016
Projects Team Manager/Project Administrator	4	00:53:29	10/03/2017
Head of Sustainability, Utilities and Engineering (SUE)	4	01:21:22	17/02/2017
Head of Energy and Utilities	4	01:01:53	20/02/2017
Head of Engineering and Infrastructure	4	01:40:44	24/02/2017
Projects Team Manager/Project Administrator	4	00:33:11	10/03/2017
Sustainability Associate (BREEAM)	4	-	24/03/2017

Table 3.3 Interviews undertaken as part of Blackdale fieldwork

Sampling for participants was a slightly ad-hoc process. On the one hand the ego-mapping exercises had provided a wealth of connected practitioners who were contacted and invited to interview, on the other, while engaged in fieldwork practitioners would frequently present themselves either to be interviewed or offering the potential for an invitation. On one occasion, having booked and performed an off-site interview at the architectural practice two other participants volunteered during the first interview. This was invaluable in the end as it meant that not only was there a structure around which the system operated but that there were

practices woven into it that might otherwise not have been encountered, or rather would have been notable only by the impact they had on the rest of the system without themselves being noted in it. Sampling for resident was similar. Having applied to the accommodation department to use their information distribution network to invite residents no volunteers came forward. Finally, having approached 20 residents on the Blackdale site in person, taking care to balance ratios of male and female, domestic and international students ten interviews took place.

In the interest of gathering the most relevant information from each part of the system interview protocols were tailored to particular groupings of practitioners. This was partly done in the interests of efficiency, but also to maintain the goodwill of participants, some of which would need to be interviewed both pre-and post-occupation. Six different protocols were devised:

Protocol	Definition	Resulting interviews
Governing bodies	Those determined to carriers of governing practice, specifically those representing governmental agencies	2
University Staff	UEA staff members interviewed pre-occupation about their role in the development and consultation process	5
Stakeholders	Originally intended to be concerned with the initial consultation process around Blackdale protocols were adapted post-occupation to include questions around management of the structures as well	15
Project management and Professional	Professional practitioners directly engaged with the operational progression of the development	20
Sub-contractors and Site managers	Practitioners employed by the contractor	4
Residents	Blackdale residents	10
Sustainability Practitioners	Sampled specifically for their involvement in sustainability related practice	5

Table 3.4 Variations in interview protocols as well as numbers of resulting interviews (Appendix 2)

Protocols differed between different groups but broadly speaking questions were divided into three topics:

1. Primary practices
2. Systemic connections
3. Governance relations
4. Sustainability relations

In order to obfuscate some of the issues with understandings of practice in many cases protocols contained examples of queries being presented multiple times with slightly different framings. This allowed participants to fully explore their own understanding of the system in the effort to aid coproduction. Each one also included a section for noting down any additional leads generated by the interview or sources of documentary evidence that would be used later to fill in gaps around aspects of the system that were difficult to approach directly. Interviews were recorded digitally as well as being transcribed in situ with key information being highlighted for later use. Recordings were then transcribed verbatim after the fact for analysis (Appendix 3).

3.4.2 Participant Observation

Supplementing the data produced through the interview process was the participant observation element of the fieldwork. Guest et al. (2012 p75) notes that participant observation is the most natural and most challenging form of qualitative data production and that certainly rings true in this case. The challenges of attempting to be present within a distributed system meant this was not a typical example of participant observation but the process was instructive and vital to the thesis. Bernard (2017 pp282-283) makes specific mention of five key advantages to participant observation. These are stated below and reflected in the rest of this section.

1. Opening up the areas of inquiry to collect a wider range of data. Only those with the privileges accorded to participants can observe certain sorts of events that outsiders are simply not allowed to do, see, or know.
2. Reducing the problem of reactivity. People change their behaviour around outsiders, and if you have an interest in “normal” behaviour, you have to stop being someone around whom people make these adjustments.

3. Enabling researchers to know what questions to ask. Being embedded in the social context helps researchers learn what questions are relevant and to ask them in terms that make sense to the “natives.” The value of participant observation at the early stages of learning about an unfamiliar culture or social setting can be huge as it teaches you what to ask about and how to ask it.
4. Participant observation gives you an intimate knowledge of your area of study, gaining intuitive understanding of the meaning of your data. Those who question the validity of qualitative methods often point to examples of studies in which the researchers grossly misunderstood something that was obvious to knowledgeable insiders or members of the studied culture or social group. Having experienced the social phenomena of interest, you are capable of taking positions about the meaning of your data with confidence that you are “getting it right”.
5. Addressing problems that are simply unavailable to other data collection techniques. We learn these things by doing them, and if you want to learn about them, there is often no substitute for doing them yourself, as a participant observer

The ability to gather data from more than one source was particularly valuable in the case of observing practices. While it is agreed that one can “talk to” practices and encourage reflection through interviews (Hitchings 2012, Browne 2016) that view comes with a strong suggestion that they should not be the only method employed (Halkier & Jensen 2011, Martens 2012). It is also true that without having been present on site many of the opportunities for interviews would simply not have occurred and the final system map could have looked quite different.

In terms of information depth interviews are valuable but they are generally specific to practitioners while simply observing the system at work allows a focus on more distributed practices and at interactions or the practices of those interactions. While the interviews made up the bulk of the dataset if one is going to claim to understand a system it is both only fitting and intellectually honest to actually be present within it. The participant observations only provided a relatively small amount of data but they provided the ability to infer patterns that simply could not have been safely inferred without the fieldwork. All through the discussions of systems of practice in this work

there is discussion of context, if the interviews provided the practices, the in situ observation provided the context.

Specifically, the more intimate understanding of the workings of the system not only put the interviews into context but allowed that context to be implanted into the ongoing interviews, specifically it allowed a greater understanding of the minefield of acronyms used on site without needing to constantly halt conversations to ask for clarification. It also offered access to a great deal more carriers of practice and because it was not always clear who everyone was it allowed a greater focus on the practices being carried by those present.

Given the inherently distributed nature of systems of practice it is impossible to be present to observe even very much of it at any given time. Compounded by the fact that, apart from the construction work which required a chaperone and permission to witness in any detail, nearly all the work being done was being done on computers. As (Røpke & Christensen 2012) note digital architectures can complicate the observation of practices by making the timespaces they occupy abstract, compressed and largely invisible. As a result the practices being observed during this time were those around intra-system connections. This binding to a specific spatio-temporal context is frustrating but alleviated by the pairing of this data with interviews which can provide an unbound account of practice.

Broadening the system beyond the Blackdale site necessitated the collection of data from not only a range of sources but a focus on those sources most connected to the rest of the system. To that end, much of the observation focused on the governors within the system in order to be present at the points of maximum information flow. This also made being present during meetings highly valuable as these formed an important point of connection and synthesis for practices that might otherwise not have been encountered at all. Since meetings often contained reports of interactions between practice the focus need not have been on the 'who' of the practice since the reporting was of its doing. This was not strictly speaking observation of the system but it was observation of the greatest extent of it that it was possible to meaningfully analyse at any given time. In addition it very much focused the fieldwork on the governance of practice and the practices of governance.

Observations took the form of witnessing meetings, sporadic site tours and occasional ceremonies and celebrations as well as fly-on-wall observation. In terms of what was observed, due to not having access to much of the main construction site without special dispensation observations were generally limited to the administration hub of the development which was immediately adjacent to the site. It housed the management and administration apparatus, sub-contractors offices, a large meeting room and a number of quite spaces. This meant that much of the observed practice taking place were various formal and informal meetings between practitioners which gave a helpful overview of what was happening onsite on any given day. The building also housed a canteen and workspace for sub-contractors and as such its population was a complete cross-section of the entire site. This made it an ideal location to simply sit and observe what was happening all around, as well as make more detailed enquiries as needed.

Often practitioners would take an interest in the research which was very helpful. If nothing else because having discussed its purpose they were often keen to help and provide data of connections to other sources themselves. Care was taken to be at once innocuous and distinct from the other actors in the area so as to intuitively maintain a certain distance while remaining approachable. Dressing in a shirt and workmans' trousers allowed rapid visual recognition from both of the main groups of practitioners present but also emphasised a neutral position outside of the incumbent power structure. Along with the consistent presence this cemented a position as a neutral observer.

Field notes were taken on either a laptop, if there was space for one or occasionally on a mobile phone. Sensitising questions were kept simple in accordance with the exploratory philosophy of the work.

1. What is currently happening?
2. What elements of practice are apparent?
3. What is the governing practice at play?

Direct references to sustainability were also noted but they tended to be rare. Because the targets were quite simple, notation was often quite short. This was aided greatly by targeting the majority of observed practice to interactions between practitioners and governors in formal or informal meetings. During these there were often conversations around everyday practice on site which helped to situate much of the data being created through the interviews which took place concurrently. Interviews provided the practices that took place within the system but participant observation provided much of the insight into the practices of governance taking place in situ.

Observations took place over a period of nine months, four months of which was post-occupation and as a result at that point observations were limited to sitting in on Soft Landings meetings. 17 field diary entries (Appendix 4) were made totalling around 7,500 words along with 15 meetings which also yielded documentary evidence for Soft Landings in the form of surveys, final certifications and minutes. These were supplemented by minutes from the earliest Design Team meetings which helped greatly in untangling the earliest practices that formed the system, both physically and conceptually.

While the on-site observations did not contribute massive amount of raw empirical data owing to a very narrow viewpoint on the system they were invaluable in terms of understanding the system as it developed and gave a far more intimate insight than could have been achieved without them. Occasional long periods with only limited activity also allowed time to reflect on the data gathering process which helped refine it moving forwards. The notes taken on site were also invaluable for the coding of the raw data that came afterwards, contributing a great deal to the technical understanding of what is required to run and achieve a development on the scale of Blackdale. They produced some of the more broad categories of practice that were useful for informing the projects of the system of practice map as well as a list of practices of governance. Onsite observations were invaluable for putting much of the data produced in the interviews in context.

3.5 Analysis and Write-up

This section addresses the methodological approaches taken to analyse data created during the fieldwork. The goal here is to both understand and effectively represent a system of practice. This analysis, far from being a *post facto* effort, took place from the very beginning of the fieldwork and continued on through the writing up process. It involved not only the transcription and coding of interviews but the iterative mapping process which then informed the various examples of cases within the broader Blackdale system used to highlight areas of interest around sustainability and governance.

3.5.1 Analysing All the Time

From the very first meeting with the project administrator it was clear that there was something of value to be studied within the Blackdale development. Elements of the system noted within that meeting such as learning practice, the technology to enable it and the reflexive focus on relationship management that enriched the process rose in prominence as more and more data solidified them as central tenants of the system as well as its success. It was also clear from the outset that the elements that were needed to answer the research questions around governance, new approaches and sustainability were all significant forces within the system already.

This was not, strictly speaking formal analysis of the system but with such an exploratory method, certainly early on it was impossible to expect to move forward without a certain logic of constant iterative analysis. Fieldwork began with an unfamiliar system, followed by a process of finding its edges, such as they were, and then moving back into it to populate it with data. Once that system was mapped it was then dug into again for areas of interest, in this case sustainability. To borrow a term from an ethnographic approach this is funnelling. Looking broadly at the system followed by the practice followed by the elements and qualities of those practices.

In fact, this cycle actually occurred twice. The mapping process was a constant effort to try to visualise the Blackdale system. This was partly an effort to understand the system and its dynamics and a partly a means of demonstrating that understanding in such a way as to make it clear to an outsider. The evolution of the initial actor based system map (Figure 3.3) went through the process of ego-mapping to shape and

bound it, interviews to populate it with practices rather than lists of actors and finally the map was expanded to include the nature of relationships between practice and the connection each one had to the sustainability of the Blackdale system, or not. In another thesis that map might have been valid in its own right but in this one it was simply a means of navigating the system and populating while observing it.

What was needed for the end result was a reorientation to more clearly reflect the theoretical work that had been done to understand the system and marry it to the empirical data. This was the second system map seen in figure 3.3 and Appendix 1. Taking elements from Schatzki (2002, 2015), Røpke & Christensen (2012) and Macrorie (2016) and combining them with the cyclical relationships taking from the conceptual framework driven by Voß et al. (2006) the Blackdale system of practice map was visualised. While the previous attempts at mapping had made an effort to impose concepts of practice onto a traditional organisational structure the final map was created by taking that same structure and feeding through the lens of SPT. This process was driven partly by the need to showcase the nature of SPT as a flat ontology but also driven the effect that the coding had on the dataset, grouping broadly defined practices together into the projects that formed the system.

This process was facilitated by also having a stronger grasp of the dataset since by that point nearly all the data had been produced. The final bits of data to be made were driven by that mapping process in seeking out the strands of sustainability within it. Again, there is the same three part cycle of analysis. Broadly defining a system was aided here by a much better initial understanding of the scope of that system. Populating that system with arrayed examples of practice was achieved more easily by already having that data rather than this being the process of finding it. Finally the interrogation of the data to find areas of interest was more the province of the writing up period as the interrogation was the sampling of case studies, seen in section 3.5.3.

3.5.2 Coding

Coding is a valuable way of identifying themes and meanings within qualitative data. Coding of the dataset addressed the three core themes of this thesis, the practices that formed the Blackdale system of practice, specific practices of governance within it, and sustainability (Appendix 5). Coding was done once to address these themes and again the finesse the codes that came from that process. Some of the initial codes came from literature sources or indirectly from the data as patterns were noted during fieldwork. This section will address in order how the codes for these three themes were arrived at.

Initially when looking for practices the intention was have information be inductive from the data and the process began with coding for practices and elements of practice. This ran into a problem very quickly as practices were difficult to define, oscillating between being so narrowly defined as to be a series of single performances or broadly defined as to be meaningless. This instigated a post-hoc rationalisation of the coding process. Starting from 20 broadly defined projects that emerged from the fieldwork and were known to be required for the development and coding for them. This done, a second round of coding split each of those structures into its constituent parts leading to 122 (99 unique) coded practices that made up the system. The exception for this was the domestic practices of residents which lacked a defining purpose or aim. However the way residents were asked to describe their practices meant they were in effect coded already and did not require any additional grouping.

Coding for practices of governance took four initial codes from the conceptual framework. These were based on a theoretical cycle of reflexive governance and the practices of those in governing positions observed during participant observation. They consisted of Visioning, Intervention, Monitoring and Feedback. Having coded for those four, each was then re-coded using more specific examples and broken down into three or four practices contained within those elements, totalling 13 codes for practices of governance. These were then applied to the system of practice map comprised of the projects identified before with interventions forming the black arrows and feedbacks forming the blue.

Sustainability, being a key part of the thesis but not a practice in and of itself required its own coding structure. Whenever reference was made to sustainability or closely related topics, energy efficiency, extending a building's lifespan, managing waste streams etc. it was noted as being an example of sustainability in practice. During coding it was found that sustainability, in terms of how it is understood and instantiated manifests in several different ways. These were re-coded into six separate categories, Environmental, Relationship, Systemic, Operational, Economic and Lifecycle sustainability. When applied to the map in terms of which practices each related to each definition it was found that they grouped into six different areas of the system. Initially this formed the basis for Chapter six but during the write-up it was decided a simpler model was needed as is explained in the following section.

3.5.2 Writing Up

The dataset created through the fieldwork was much too big to be tackled in a meaningful way in a single chapter. Even the map, which itself is a simplified model of the system was still comprised more data than could be presented. As a result the data that was presented had to be selected careful to showcase all important aspects of the system without getting lost within it. The empirical chapters each broke the system down in ways that could be interpreted to answer the relevant research questions.

Answering the question of what the system was, Chapter four presented the final system of practice. It divided the map into three bands, Practices of Governance, Practices of Construction and Practices of Habitation. These provided a descriptive overview of the system of practice around Blackdale while breaking it down into sections that could be readily understood. Each band represented a different spatio-temporal context with the Practices of Governance providing the impetus for much of what took place within the system while being in many ways removed from everyday practice. Practices of Construction concerned those practices directly involved with the physical manifestation of the Blackdale buildings. Practices of Habitation consisted of the practices of residents but equally the practices of those invested in monitoring, maintaining and managing the Blackdale site post-occupation. These bands allowed an exploration of most of the system and its workings without the need for granular detail which is so often a hallmark of SPT empirical work.

Answering the question of how governance manifests within the system Chapter five takes three examples and uses vignettes to present each as a moment of governance. Sampled for diversity these represent three different forms of governance within the system. Between them the three form a narrative structure which begins at the inception of the system, moves through its development and finally to its output and the feedback effect that the Practices of Habitation have on the policies of UEA moving forward. Between the three cases a vision of how governance actually affects a system of practice is presented, allowing both a critique of current, decisionistic understandings of governance and a celebration of some of the more reflexive practice found within the system.

The final research question addressed by the empirical chapters is that of sustainability within a reflexive system. This required a two pronged approach, first highlighting how sustainability manifests within the system and then the impact of reflexive practice on that system. As noted above the data on manifestations of sustainability was simplified into three categories of economic, social and environmental sustainability proposed by Cato (2012) with the addition of a fourth, the status quo. Finally examples of reflexive governance that had been highlighted during fieldwork and analysis as having been vital to the success of the development were sampled and used to create a framework for how a system of reflexive governance of practice might operate.

3.6 Research Ethics

Lastly there needs to be a brief discussion of the ethical dimensions of the proposed methods. While there was nothing within this work to give any great pause to an ethics panel it behoves all those attempting to create data in the field to make due consideration of the ethical issues they come into contact with (Ali & Kelly 2004, ESRC 2015). Three specific areas will be addressed in this section. First, the ethics of semi-structured interviews with a focus on consent, anonymity and power relations between interviewer and interviewee. Next, participant observations are addressed with a focus on ongoing issues of consent, anonymity and positionality. Finally comes the problem of representation in writing up and how the words of participants are represented.

3.6.1 Ethics of semi-structured interviews

It is a convention that anonymity and confidentiality should be respected as much as possible during interviews (Murphy & Dingwall 2001). Interviews were secured by means of invitation, either in person or often by email. Informed consent was usually collected as part of that invitation process or immediately upon the commencement of interviews (Appendix 6). Participants needed to be informed they would be recorded and that they would remain, as much as possible, anonymous since no personal information beyond their role and their account of everyday practice would be used. They were informed that they could leave at any time and that they had the right to redact data they did not want used. Residents were selected for post-occupation interviews randomly and agreed to be interviewed on a voluntary basis and thus were duly anonymised. Neither set of interviews offered any kind of reward as that could be seen as coercive as well. With that being said, in encouraging the participant to reflect upon their own practice there is potential for the exchange to also be valuable for the participant in the performance of their own future practice.

The vast majority of interviews were treated as elite interviews since the participants were selected specifically due to their relationship with the project. Specific information on practices is required from them and as a result interviews could not be conducted anonymously or with randomly chosen participants. Similarly the role each plays is relevant to practice carried. The individual is not the object of study, merely the actions that that individual participates in and as such any discussion of personal information was a digression from the topic at hand was not used anyway. The intention of this research was never to find information about specific individuals but to generate a list of actions carried by them. As a result personal information recorded in elite interviews is limited to that which is specifically important to the participant's tasks. This extends to, aside from names and job titles, personal understandings of the reasons and meanings behind the practices they may carry and any personal interest they might have in sustainability outside their work.

Perceived power dynamics between the researcher and the interviewee can be an ethical issue with interviews. Interviewees often feel under pressure to produce results or say more than they might otherwise divulge. Particularly in the case of those involved in construction if anything that power dynamic was reversed with

interviewees being specifically sought out for their expertise, more often than not involving travel to them and meeting on familiar ground. This was more a concern with the residents but interviews were conducted in a quite social space within Blackdale and adopted a conversational tone in order to alleviate any perceived imbalance. At the beginning of every interview the participant was made aware they could leave at any time, that they could be given access to any data created and that no personal details were required from them. The relatively formal nature of the interview helps to situate the interviewer within the system of practice as an understood quantity, eliminating potential worries around power dynamics. This helps in alleviating the 'otherness' of an unknown entity in the work place, particularly in cases where interviewees are coming directly from professional practice and lowers the risk of potential discomfort or anxiety.

3.6.2 Ethics of participant observation

Participant observation raises the greatest number of ethical questions and complications. As Punch (1994) points out, it may well be that participant observation is inevitably unethical by being 'interactionally deceitful'. However, guidelines can still inform this research.

"The researcher will ensure that: a) where possible approval will be sought from the coordinators; b) no details that could identify specific individuals who have not given permission to be involved will be given in any reports on the research."

UEA Research Ethics Policy regarding participant observation (Section 2.2.9)

The primary ethical question in regard to participant observation is whether to conduct research in a covert or overt manner (Silverman 2013). This is not a difficult issue in this example as, in gaining access to the development; there was a need to identify the researcher as such. When observing meetings introductions were made at the beginning before retreating to the periphery to observe interactions between participants. Trust was established through self-presentation and demeanour (Silverman (2013), being open about the research and the interest in what was being observed. If those being observed had questions or comments about the presence of

an observer, they were answered but no part of those discussions feature anywhere in this work.

Given the nature of a building site with many actors moving in and out at all times it is impossible to acquire meaningful consent from all parties as this would necessitate an contacting each one of a thousand contractors and sub-contractors individually, many of whom would never have been present to be observed. While this would technically be an ideal solution it would require more effort and take more time than the observations themselves. In addition to the problems faced by the researcher in this scenario, repeated requests for consent may be unduly disruptive of the activities being observed. When informed consent cannot practically be obtained, it is up to the researcher to conduct the participant observation in a way that still protects the rights of those being observed. In this, overt note taking is useful, due to being an outsider/observer it is clear to all parties what the purpose of the researcher's presence is. Once this relationship is established, the researcher is a little more free to fade into the background and gradually become more immersed in the movements and interactions on site, gaining more data on naturally occurring interactions.

3.6.3 Ethics of writing up and representing the case

The final issue is that of representation. This becomes more important during the analysis and writing up process as having left the field there is a risk of becoming dissociated with the views of those who gave their input to create it. In addition there is always the risk of personal interpretations of how the system operates interfering with the empirical analysis. Understanding that risk meant that care was taken to only make statements that were representative of the dataset and where possible making use of direct quotes.

The point of the fieldwork was to generate an understanding of the Blackdale system as a whole and the analysis served to interrogate aspects of it. Any data created as part of the fieldwork served to structure, flesh out or fill in gaps with the final map and as a result it is hoped that participants should be able to find themselves within it. At several occasions the map was presented to various actors and it was intelligible to them and so it would seem to be a viable model. The entire point of the process and indeed one of the reasons why access was granted to it in the first place was to

produce a distinct vision for how the system operated and as a result there is a risk that it might not be recognisable to all those who contributed to it. Once the work is finished there is a hope that it, or portions of it might be presented to the governors for the system and that they might be able to use it to aid in their operational organisational. Any recommendations are anchored in aspects of the system that already exist and have been noted to be useful so in that sense it may just serve as further evidence of their effectiveness which can be seen even through an entirely different theoretical lens.

Chapter 4: The Blackdale System

This chapter is intended to answer the first research question:

“How can systems of practice be mapped out?”

The first part of the answer to this question is methodological and was covered in the previous chapter (3.3). Now it is necessary to describe the system of practice and the relationships within it. A map of practices was created using the data gathered as part of an in-depth study of the construction, maintenance and occupancy of the Blackdale development. As described in Chapter two, these are grouped into eighteen projects (Røpke & Christensen 2012) and other structures, defined by their requirement to achieve a particular goal within the system (Schatzki 2011). This chapter is concerned with the relationships between those projects, with specific instances of governing relationships being discussed in greater detail in Chapter five. This type of practice mapping has not been attempted in the literature before, or rather, not on this scale (Higginson et. al 2015, Macrorie 2016) and represents a novel offering of this PhD to thinking on systems of practice and governance of practice.

For the sake of brevity, and to aid in the understanding of the relationships and governing structures of the Blackdale system, the full map is broken into three bands. Each band contains groupings of projects which are then discussed further in terms of their interactions with the rest of the system of practice. The bands used here correspond to the three types of practices outlined in the conceptual framework in Chapter two. They are divided into Practices of Governance, Practices of Construction and Practices of Habitation.

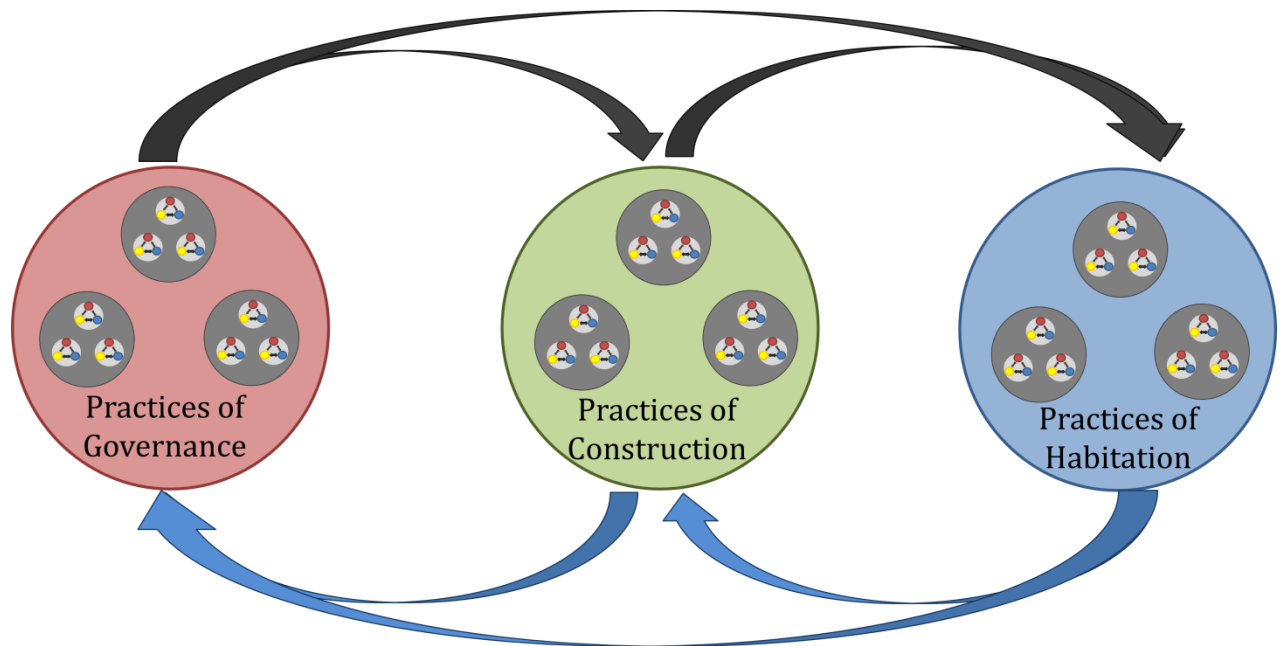


Figure 4.1 Conceptual framework based on initial conceptual framework constructed in section 2.4. Practices are grouped into grey projects and into coloured sections based on the broadly defined groupings of practice encountered during fieldwork.

The Blackdale system is comprised of practices, which are subsequently grouped into projects, and their interactions. To facilitate analysis and to make the map more accessible to the reader the system is broken down into the three bands noted above. The bands correspond very broadly to concepts espoused within the conceptual framework. In Chapter two they are the practice of governance, the governing practice and the lived experience. In the specific context of Blackdale they are the Practices of Governance which seek to shape the Blackdale system, the Practices of Construction which represent the capacity of practices to govern without intending to and the Practices of Habitation representing the combined effects of previous two and the capacity of even governed practices to influence others. The bands themselves draw out specific theoretical themes within the thesis and form a structure that allows this chapter to explore those themes within the Blackdale System.

Each band is broken down further into groupings representing or encompassing the core meta-practices (Røpke & Christensen 2012) contained within each area of the Blackdale system. Each of these is allotted a sub-section of the chapter for the discussion of the practices situated within. This includes their teleology and the potential interventions that they might carry and enact on the wider Blackdale system.

The interventions used are based on the practice interventions introduced by Spurling et al. (2013). Spurling et al. described interventions in terms of 're-crafting practices' by altering the elemental makeup of practices, 'substituting practices' wholesale and 'changing practice interactions'. For the purposes of this thesis they are re-defined as element curation, practice curation and practice coordination to reflect the more deliberate nature of practices intended to govern. Element Curation is here defined as the inclusion or excluding of artefacts, skills or images from practices. Practice curation refers to the introduction, addition or dismissal of complete or self-contained practices from a project. Practice coordination describes the re-ordering of practices in either time or space, in this case often in terms of creating timespaces (Schatzki 2009) within which practices are performed. The decision to re-classify them was taken partly to simplify the discussion within this chapter, meaning that specific interventions could more clearly identified as discreet interactions but was also driven by the regularity with which concepts around curation were identified during fieldwork. It allowed for more intuitive analysis and hopefully, clearer presentation of data.

Many of the elements of the system persist temporally before and after the timeframe of the development and post-occupation. Meanwhile, the organisation of practices and their interactions only existed in this particular arrangement during construction and thus the precise relationships described are only present during the timeframe of the case study. This is an inevitable outcome of the dynamic nature of practices and, by extension, their interactions within systems of practice. The system of practice map highlights groups of practices that were not present in previous iterations (Figure 3.3) based on other more hierarchical models. These include the projects of learning and relationship management; much of the project's success is credited to these projects but they would not feature in an actor centric map. In stating that "Practices recruit carriers in board rooms, the physical spaces of futures trading and government offices as much as they do on streets and in homes," Watson (2012 p489) notes that Social Practice Theory (STP) provides opportunities to see social structures in new ways than top-down hierarchies.

This chapter describes the Blackdale system map and will be followed by a more detailed interrogation of aspects of its governance in Chapter five and the governance of sustainability in Chapter six. Chapter six also makes note of the different definitions of sustainability found within the Blackdale system and how these interact. The map, and mapping process described in Chapter three, creates the framework around which to construct these conversations.

4.1 Practices of Governance

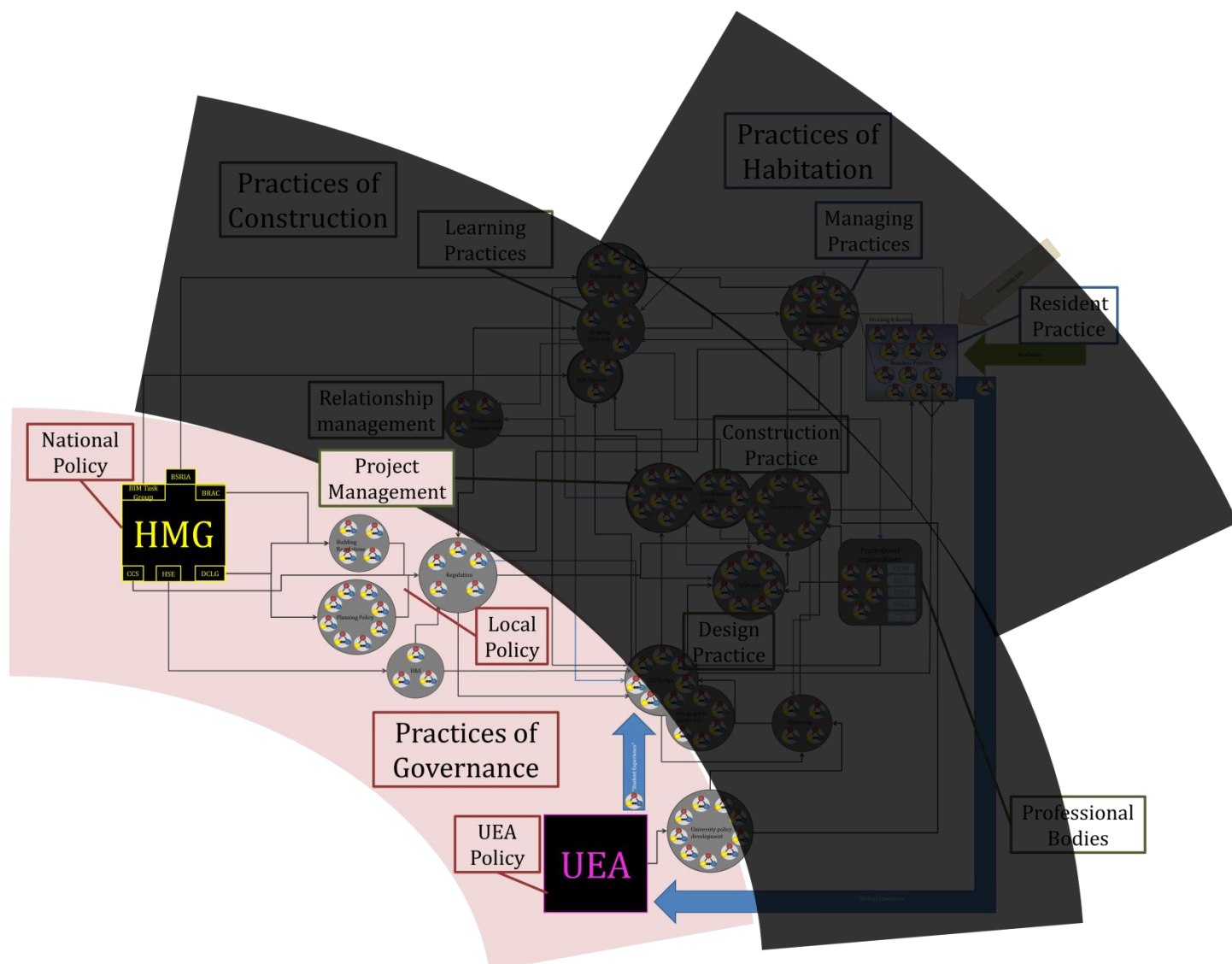


Figure 4.2 Practices of Governance map section, represented by the red band, isolating the Practices of Governance present within the Blackdale system

In describing the governance of a system of practice, the logical start points are the places at which governance is itself a practice. As described previously, practices govern other practices through interconnection and spatio-temporal relationships. However, in some cases practices are also intended to govern through their performance. This can be either in terms of meanings within a particular practice or a shared teleology between a group of practices, intended to govern one or more practices within a wider system. To use an example from Blackdale system, project management carries within it

meanings around governing the practices taking place during construction of the Blackdale development. Practices performed by Norwich City Council's Planning department, whilst different, share the goal of shaping practices outside of their own context. The intention to govern other practices is a defining element of the Practices of Governance.

This goal-orientated understanding of Practices of Governance leads to an instrumental understanding that is not strongly presented within SPT (Spurling et al. 2013). Much of the SPT literature is concerned with the less intentional means of governance because that is a key strength of the theory (Shove & Walker 2010, Schatzki 2015, Shove et al. 2015, Macrorie 2016). The unconscious way in which practices might govern one another is a valuable insight, but in terms of future-creating largely serves to, however elegantly, describe complexity (Shove & Walker 2010) rather than seek means through which practices can be consciously governed. One task of this thesis is to situate practices involving intentional governance within systems of practice.

This section describes the Practices of Governance band on the system of practice map, divided into three sub-sections addressing UEA policy, local government policy and national governmental policy. Some of these are included as practices in their own right, some feature as the practices of intermediary carriers such as inspectors and some feature as interventions emanating from Practices of Governance that, given the time constraints of fieldwork could not be studied in a detailed way. In effect these assumed Practices of Governance are entire, separate systems of practice in their own right.

In broad terms, policy practices provide direction by either enabling or reinforcing existing instantiations of practice. The more spatially removed the Practice of Governance is from the Blackdale system, the more diffuse its influence becomes. UEA policy acts as a motivating force upon the system, enabling it and pushing it from inception to completion. Local policy monitors and enforces to ensure that the system fits with a local government plan for the area. National policy regulates and introduces elements into the system to allow it to interface with a national agenda.

Each of the three Practices of Governance groupings found in the Blackdale system creates and curates a space for practices to take place in. In a similar way to the Practices of Construction creating a physical space into which practices can be carried, the Practices of Governance create an intellectual or legal space as well as delineating the physical limits to the more physically instantiated practices performed later. This is important because while these practices shape the system; each does so in a slightly different way, from a different angle or direction and to a different purpose. The differences in types and location of Practices of Governance are important for the understanding of the system as well as the more general understanding of how practices interact.

4.1.1 UEA Policy

Defined by its overarching goal, the maintenance and development of the University and its assets, UEA policy is the primary driving force behind the inception of the Blackdale development and its management. The key projects involved are financing, policy development, promoting the Student Experience and Design Guide production.

Financing is one of the primary driving forces behind the running of a modern university but is of particular relevance in the case of UEA at the time of writing. Driven by the operational needs of its expensive and aging infrastructure, financial solvency drives everything. Financing in this case refers to both the shoring up of current revenue streams and providing money for further development. One of the main drivers for the creation of new halls of residence is the need to increase income through student fees (McCowan 2012, Royston 2016). The Lasdun Teaching Wall, the central spine of the campus, which houses much of its teaching, office and research space, is in need of refurbishment as it nears the end of its operational life. As the quote below attests, in order to make space in the budget for what it is likely to be a massive operation more students are brought into the University and, because of this, more residences are therefore needed.

“[Sustainability] is a balance between [...] financial, social and environmental and at the moment the emphasis [is] more on financial, but not at the cost of the environment. Yes there’s less emphasis on the environment at the moment because we need to find a lot of money to refurbish the Teaching Wall...”

Head of Sustainability 39:40

It is important to note this balance of factors when studying interventions from financing. ‘The Eternal Triangle’ of quality, cost and time is a primary framework for project management at Blackdale. The primacy of financing in this Practices of Governance has an effect on many of the elements involved in construction. In a more cynical environment this could mean a loss of quality but within the Blackdale system and UEA more widely, the more holistic understanding of life cycle cost leads to sustainability and efficiency measures bridging the gap between cost and quality. This is represented in skillsets present within, and recruited to the development as well as meanings around lifecycle costs rather than a focus on purely construction costs as seen below.

“Someone contacted me to try and build a model that looked at cost-in-use. So it’s the actual costs of what the construction costs were for Blackdale and then I spoke to the project manager who then did a more accurate lifecycle costing [and] built a model of what it was going to cost over the next 60 years [and] when the spend was likely to be taken”

Finance and Procurement Manager 6:34

Because the Lasdun wall refurbishment is likely to take a decade or more (UEAc 2018), it is important that savings now do not translate to increased costs later. Much of the burden for realising these goals falls to the project Quantity Surveyor (QS), and subsequently the contractor QS team. Quantity surveying, the accounting and costing of material construction, is a significant part of any development. In the case of Blackdale, with the time and cost constraints on it as well as the need for sustainability to be built in from the start, it was vital that the right elements of QS practice were present. In this case, because the carrier of this practice is brought in under contract for the duration of

the development, recruitment becomes practice curation rather than simply element curation.

Policy development practice also ties into the longer-term thinking involved in new construction at UEA. Very simply it refers to the University's visioning practice and how it sees itself, as an entity, continuing into the future. Its two main goals are around understanding what is likely to happen in the future and reputation management (UEAb 2015). In terms of sustainability, this means attempting to predict and account for an increasingly unstable future as well as boost the University's reputation for sustainable innovation and research (UEAb 2018). In terms of element curation, this involves the inclusion of meanings around being forward-looking as an institution which is shored up through increased emphasis on consultation of a wide range of groups around what the University's future policy should be (UEAc 2015). From these interactions comes a series of both practical and theoretical visions for the future of the University, including the 'Target 2020' energy and carbon management plan (Darsley 2015), the 2030 Vision (UEAb 2015) and the proposed 'Sustainability Vision' which is intended to vision and then meet a sustainable future rather than extrapolating from present circumstances. Attached to these visions come practices involving monitoring, assessment and risk management. New institutional roles were created in the case of the Sustainability Vision and the environmental management system (EMS) implemented through ISO14001, intended to facilitate the meeting of these goals.

Policy development also coordinates existing practices around the previously stated goals of bringing in more funding to accommodate more students, thereby allowing for refurbishment to enhance the Student Experience, the reputation of the University and its research output. Additionally, this coordination begins to enhance collaboration between academic staff and management as consultation fosters links between practice towards sustainability (Barna 2013, HEA 2014).

Managing and shaping the Student Experience can be considered the primary business of the University as it is considered to be both an indicator of quality in terms of output and the primary means of garnering funding through attracting new students. The student experience is a unique element of the map in that it represents both the

everyday experience of students as part of the Practices of Habitation and a powerful feedback mechanism that the University mutates into the Student Experience as a policy practice. This has become more prominent since the shift of university funding from HEFCE to student fees, as noted by Royston (2016) when giving consideration to energy demand in Higher Education institutions.

“This agenda also governs the provision of spaces, facilities and equipment; e.g. accommodation is becoming larger, with more en suite bathrooms, and internet connectivity is expected everywhere, all the time.”

(Royston 2016 p10)

The Student Experience is almost an intervention on itself, operating remotely through the UEA policy project. Because of this focus on the Student Experience, the design and construction projects are pushed towards elements that are considered to enhance the student experience; specifically, better quality, but more expensive, accommodation. This is an example of element curation; images associated with Student Experience and quality are implanted into design practice as well as recruiting them into its own structure. The push for higher specification also affects artefact recruitment in that, for example, student residences have in recent years moved towards en suite showers rather than communal ones.

In terms of practice curation, the Student Experience agenda does not so much recruit new practices as emphasise existing ones. Because it is measured largely in terms of survey results, these feedback mechanisms are given priority in both policy making and practical attempts to maximise results by this metric. Because the Student Experience is tied strongly to funding it also translates to an increase in construction of new, higher specification residences.

“We’ve got a number of [KPIs], we had to achieve a 98.5% level of occupancy. We also have a particular income target... We are looking at target achievement for things like the student experience [...] that’s how we measure, broadly what we do in terms of financial targets and quality of service”

Head of Accommodation 15:20

With the Student Experience being a proxy for income and financial efficiency being a main driver in building policy, it would be reasonable to assume that sustainability could be pushed off the agenda entirely. However, UEA has recently updated its Design Guide and thereby works to keep sustainability at the heart of the construction process (UEAd 2018). The goal of Design Guide production was to embed sustainability into new building stock at the tendering stage. It ties the cost and quality points of the Eternal Triangle together by forcing a more forward-looking perspective in terms of lifecycle costing. Its purpose, as noted in the quote below, is largely to embed environmental sustainability into UEA's development process, without ever mentioning it explicitly. This is one of a number of points in the map where environmental sustainability is injected in with the explicit goal of enhancing financial and operational sustainability as well as cost efficiency but with the meanings involved being clearly environmental in nature.

“What I will say, is that, quite silently written into the Design Guide, in the fine detail is ‘Sustainability’ throughout. Sustainability can be achieved in many ways. I would call the Design Guide [a] ‘Silent sustainability campaign’.”

Head of SUE 11:39

Having specifically not made any effort to curate elements in terms of meanings, the Design Guide does curate virtually all other aspects of design and construction (UEAd 2018). It sets out UEA's standards for everything from construction material to colour palettes. This embedding, right at the very beginning of a development, constitutes an intervention of practice coordination by tying elements of practice together very early in a project so that there is no further coordination required later in terms of additions or retrofits.

“We don't just, kind of, throw the Design Guide into the consultant team. We have an engineer from the client side [...] who facilitates the embedding of the Design Guide at a project level. They sit on the Design Team and there's checks and measures put in place by them to make sure the Design Guide is used.”

Head of SUE 19:36

This practice of early embedding a practitioner in with a Design Team constitutes practice curation in that the practice of embedding the Design Guide specifications is recruited specifically because the Design Guide exists.

UEA policy could be described as moving towards sustainability in the right way for the wrong reasons. It is embedding sustainability seamlessly into practice without, as an entity, meaning to, with the goal of saving money to be able to expand later. By tying sustainability into concepts of quality and cost it is more firmly embedded than if it was left as an afterthought, but also itself makes sustainability of buildings subservient to the overall purpose of profit making. The profit motive and Student Experience goals speak to a constant need for expansion and intensification of the use of current resources (McCowan 2012, Royston 2016).

“This has made student experience a priority, guiding policy and planning across virtually all university functions, and creating new temporal patterns (e.g. the extension of opening hours for libraries, computer rooms, launderettes and help-desks).”

Royston (2016 p10)

UEA policy is with each new iteration embedding sustainability more firmly into building stock and gradually refurbishing old stock. However, the expansion itself assumes that no reflection has been made on whether or not expansion is a means of reaching a holistically sustainable campus.

4.1.2 Local Policy

Local policy, as it interacts with Blackdale, is split into regulation and planning. The teleology in this grouping revolves around enforcement of national legislation and ensuring that the development conforms to the wider vision for the local area.

“Planning services is basically spatial planning. It’s about setting policy and it’s about controlling development. We have a local plan, which gives parameters to where things can be built, what types of uses can go where.”

Senior Planner 00:59

The two main practices carried through local policy are assessment and monitoring. These take place through a more or less continuous process from well before a design is fully realised to the hand-over date. The goal of the assessment practice here is to ensure conformance to local plans and legislation. There is a focus on consultation within this, and with a wide variety of local groups to maximise information flow.

“It’s dealing with on these projects, the Local Authority, the Planning Authority, Building Control, for the straightforward things, as part of the process. There may be other bodies, like the Environment Agency [...] English Heritage sometimes, for listed buildings.”

Principle Architect (Client) 6:52

Before planning permission is sought there is the pre-application process. It allows project management to assess the requirements of any potential application and demands skills of time management and communication in order to head off potential problems ahead of time.. It strengthens meanings around the advantages of cooperation in an environment that can often be competitive or actively hostile. This is element curation in terms of intervention, but is more co-produced than some more imposed interventions as it is a function of two sets of practices merging over time for mutual benefit rather than a more traditionally understood intervention. This slow integration is demonstrated in the quote below:

“We encourage [...] the pre-app process. We have better relationships with the UEA, and I think they’ve improved over the last seven or eight years whereby we do now more actively engage with the University and they more actively engage with us to get appropriate outcomes. Hopefully they’re pleased with what they’ve got at Blackdale, because of the negotiation that we had before they submit the application.”

Senior Planner 16:25

The assessment process requires the recruitment of different assessment practices into the development early on. Environmental impact assessments, flood risks or specific arboricultural appraisals are all required as part of the planning application. These add additional practices to the overall development and aim to minimise disruption to the surrounding environment.

In terms of practice coordination, the assessment process is perhaps a more substantial intervention than those mentioned previously as it has the capability to completely halt any further progress if not completed successfully. Planning is not something that can be left; it occupies a gatekeeping position through which the rest of the system of practice can only pass once its criteria are met. As noted, for that process to be smooth it requires practice outcomes to be in place ahead of time and not just coordinated to answer those criteria.

Along with the initial assessment comes monitoring to ensure that the development keeps its output within minimum standards expressed by law. This monitoring is not exclusively the domain of local government. UEA policy and project management monitor progress towards the design specification as well, but this is specifically in reference to absolute minimum standards set out by UK Building Regulations (2010). The process is administered by an outside agency attached to Norfolk County Council. As such, while monitoring practices are shared throughout the system, this represents recruitment of a 'whole', discrete practice into the system, specifically attached to the Practices of Construction and design that carry 'building control' practice. Whilst the practice of monitoring the site involved skills around observation and understandings of design documents, the main element being added by this practice into the system is that of certification. Building regulations are minimum standards for habitation, meaning a building that does not follow them would not be practically or legally inhabitable. What is added by this process is authentication and the legal capacity to continue with construction. Much like the planning process, the monitoring of compliance with Building Regulations requires a great deal of coordination between practice as each step of the construction process can only advance once it has been signed off. The signing off can be done from design drawings and documents but leads to a knock-on effect that each stage of building must be completed before the next

begins. It also requires careful coordination of practices by the contractor to make sure that the Practices of Construction needed are present, available and supplied with material at the right times.

Both planning and building regulation represent gateways or conduits through which projects can pass. They are seen as Practices of Governance in their own right by those carrying Practices of Construction but they are often simply manifestations within this system of policy practice taking place at a governmental level. They are representatives of the Practices of Governance rather than the practices themselves.

4.1.3 National Policy

National policy practices stand another spatial step removed from the Blackdale system, without the practitioners involved being consciously aware of their influence. The interventions from this quarter are mostly in the form of regulations and standards setting boundaries for practice. They form an imperceptible foundation of practice that is very rarely remarked on. When questioned about government, common practitioner responses were along the lines of:

“We don’t really have a lot to do with that”

Project Administrator 0:59

None of the interviewees contested the assertion that they, for example, followed laws, but most cited more local forms of enforcement as the source of that governance. When pressed, the Project Administration carriers did note a number of interventions by government into the system in the form of initiatives. This response could be explained by the fact that national level Practices of Governance operate largely at the level of practice as entity addressing, in this case, construction, as an entity rather than at any point specifically addressing any particular performance. Governance is then devolved to local policy and free to engage on a case by case basis. The teleology in the case of national policy is the steering of that practice as entity in line with Government policy goals.

In order to achieve these policy goals, however remotely, the Practices of Governance involved in national policy that interface with the Blackdale system are the setting of regulations and the sponsoring of initiatives that facilitate information flow within construction as a practice. Regulation of both practices and elements of practice, specifically the specifications of materials, simultaneously standardises construction as a practice and makes the enforcement of that standardisation simpler by allowing fewer deviations which then need to be tracked and addressed.

“First of all you’ve got Building Regulations [...] or you don’t have a building you can inhabit. Building Regulations in the UK are pretty good, but they’re always set as a minimum standard.”

Project Administrator 4:04

As an intervention, minimum standards affect elements both in terms of materials and meanings as to what is considered acceptable in terms of output. The critical part of this intervention is that it is often not considered to be an intervention as such, but that minimum standards are so ingrained into practice that it is simply ‘what is done’. Minimums are so powerful and ubiquitous that they are effectively considered to be the context for practice rather than part of it.

“Standards and safety are always [the] priority. And timescales: you’ve got to meet targets, to a point, but without compromising the first two.”

Electrical Supervisor (Contractor) 15:59

Along with minimum standards come practices recruited to enable them, specifically inspection and enforcement. These are recruited during the initial design phase as part of construction practice.

“You get [the contractor] who’re the main client and they get their project team together to design this building to show it complies with all the required regulations and is fit for purpose for the end user”

Building Control Surveyor 10:32

Minimum standards, and compliance to them, are factored into practice at all significant stages of construction. Statutory inspections cover foundations, flooring, drainage, roofing, joints, general structural soundness and finally the quality of the completed building; work cannot progress past these points without assent generated from enforcement practice. Whilst the inspection and certification practices are provided by an outside agency attached to local government, both its practice and the national policy it represents are entwined with construction to the point where it cannot persist independently. In this way, national policy not only creates space for practices but also produces temporal pathways through which projects progress with checkpoints and gateways the only way to ensure that they are being followed.

Another national Government interaction is through sponsored initiatives. Generally speaking, these are facilitated through essentially-independent groups of practitioners in order to develop and define best practice before, using a government mandate, incorporating this practice into wider systems. In addition to facilitating best practice, these initiatives also make use of information gathering and sharing technology to further identify and spread effective practice elements through social and digital mediators.

“There’s lots of government initiatives that filter down, such as BIM. Soft Landings is a government initiative, BREEAM isn’t a government initiative, but it’s sewn in. There’s other new forms of procurement that the government are trying to persuade us are a good idea, which in principle are, but in a commercial world it’s difficult to see how they would work”
Project Administrator 1:12

Each of these initiatives is tied to a policy group operating at the national level. The Building Information Modelling (BIM) system is the product of the BIM Task Group (BTG) and is now mandated for all public buildings (NBS 2017). Soft Landings (SL) comes from the Building Services Research and Information Association (BSRIA), and is implemented alongside BIM at UEA. Both agencies carry Practices of Governance in the sense that they shape and disseminate policy on an ongoing basis.

As a digital modelling tool, BIM comes under element curation in terms of intervention. Its intervention comes in the form of a number of different meanings and skills that are often incorporated into construction practice, such as IT literacy and reporting as well as skills around reading, collating and disseminating information that is often in different formats on delivery.

“We then had to manage the input of all those models into one, federated model that would talk, all the different software would talk to each other. We had to convert it into an IFC format, which is an industry standard.”

Senior Design Manager (Contractor) 4:33

The design manager would usually have been absent by the stage of development when this quote was taken, but was retained to assist with BIM integration alongside the BIM manager recruited for the task. This represents both integration of practices in one carrier but also recruitment of a second carrier to jointly carry the same practice.

Soft Landings is a different intervention in that it incorporates formalised, integrated relationship management from a very early point in the development. It doesn't represent an intervention in elements so much as the skills, meanings and artefacts around such activity were mostly present previously, but it ties them together into another project that will be discussed later in this chapter (4.2.6). Both of these interventions form a convergence of practices, tying them together in ways that allow for mutually beneficial results. They strengthen the relationships between practices by allowing a common, formalised environment and a formalised understanding of what the practice each one intervenes in entails.

The 'direct' effects of national Practices of Governance on the Blackdale system are limited, but laws and legal constructs bound the spaces in which practices operate. None would suggest that national policy practices do not govern, but in most cases it is simply taken as read that the law is followed and that it is the foundation of a successful development rather than an expression of excellence. The new initiatives represent more useful interventions to look at for the purposes of assessing governance within the system; these will indeed be interrogated in more detail in Chapter's five and six.

The effects of Practices of Governance can be wide ranging across the physical territory in which they operate but they are constrained by that territory. For example, UEA policy practices dominate many of the practices that take place within the campus but are largely limited to that space. Similarly local policy practice is applied only to the local area, with other local government groups being able to interpret national policy differently. Practices of Governance can be limited in their scope by physical location but they create a theoretical timespace (Schatzki 2009) in which practices operate, bounding that space through the curation of elements and practices and the intermingling of practices that are allowed to take place under their aegis. This effect is a mirror of the Practices of Construction, which creates a physical space for the Practices of Habitation to take place in but otherwise has little in the way of intervention once that space is created short of deterring or punishing deviations outside of certain expected criteria.

4.2 Practices of Construction

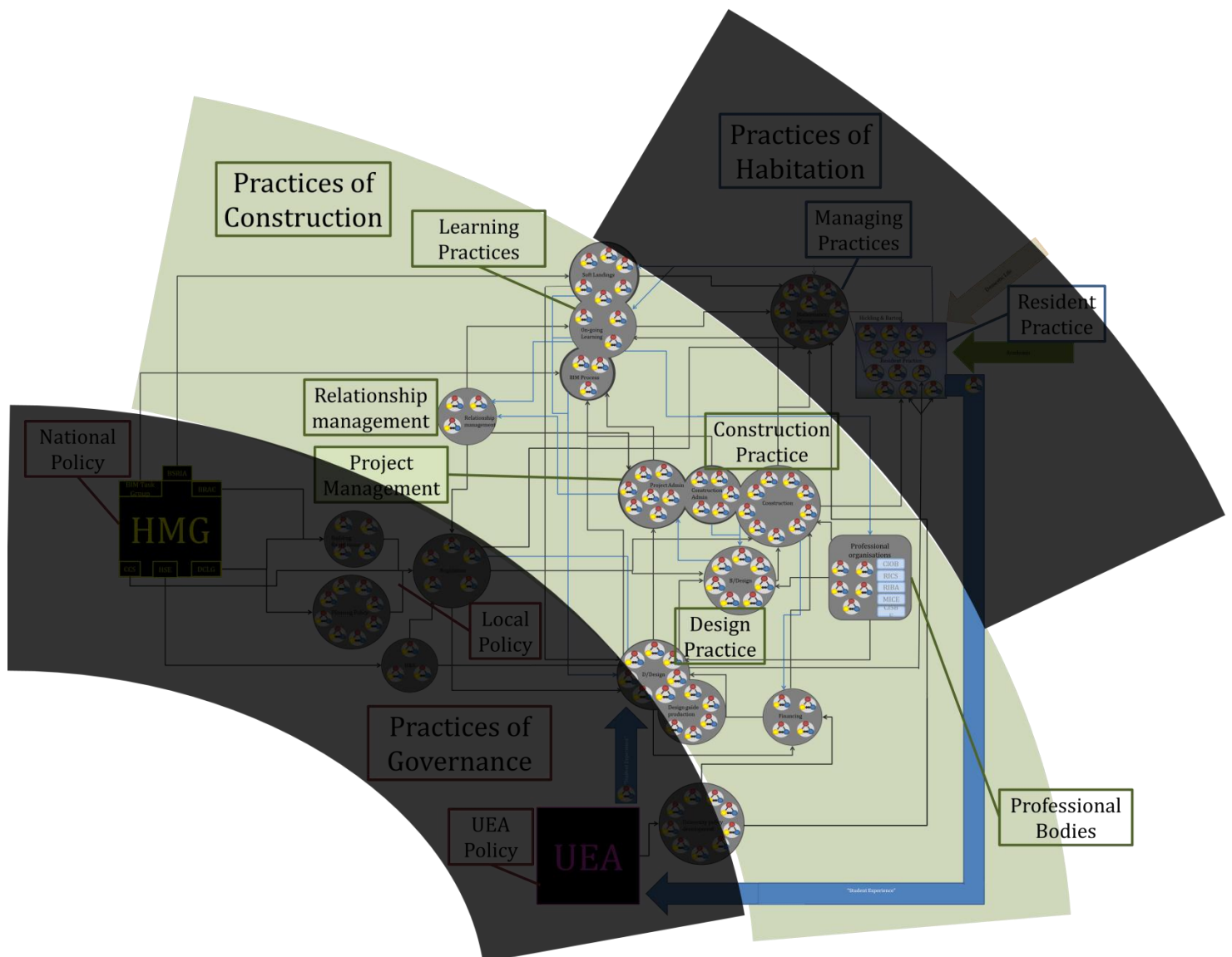


Figure 4.3 Practices of Construction Map Green band, indicating the Practices of Construction section of the Blackdale system map

This section details the practices involved in shaping the physical results of the Blackdale development. These are mainly professional practices recruited into the system through UEA policy and shaped by early design interactions between Practices of Construction and local policy. This shaping happens relatively early on and after that point the Practices of Construction are relatively prescriptive in that they follow the design shaped by policy practice.

The Practices of Construction band has a greater number of sites of practice considered to be of substance within the system. The primary sites of practice in this band are design and construction practice, which are administered through project management practice and informed by the actions of professional bodies and the more reflexive learning practices and relationship management that generate and disseminate data both within and outside of the Blackdale system.

It is important to note that design in this case takes two forms, with two separate teleologies and different elements. The Blackdale development operates under a Design and Build (D&B) contract system where ownership of the design passes from the client to the contractor during construction. The design is produced by the client in association with practitioners recruited for the purpose and then handed over, technically unfinished, to the contractor. The contractor's responsibility is then to complete the construction to the specifications of the initial design while certain licence is given to make alterations in the name of efficiency or profit so long as the initial specification is not compromised. This process is intended to increase temporal efficiency of the build as well as make greater use of the specific technical skills of the practitioners employed by the contractor. This is as opposed to a more traditional design process, where the client maintains ownership of the design throughout the development.

As a result, design is split into DDesign, representing the initial vision set out by the client (in this case UEA) and BDesign, the process of design completion under the aegis of the contractor. That is not to say that these two projects are not linked; there is a certain amount of consultation required for deviations from the initial design brief and justifications must be made, but control of the design rests with the contractor and as a result the central teleology of design practice shifts. During BDesign the design is much more responsive and closely linked to construction practice whilst during DDesign it is primarily driven by UEA policy.

Practices of Construction definitely govern what takes place in much of the rest of the system, by providing data to influence policy, by the physical manifestation of space through which practices can be carried or simply by taking up time and resources that

might otherwise have been applied to other practices. They are, however, themselves more of a conduit for policy practice, enacting its goals through their own practice with very limited agency. Because the case study is principally concerned with the construction process and its links to other practices it could be said that this grants more focus to the practices in this group than they deserve. However, despite the relatively prescriptive nature of the Practices of Construction here, without them the Practices of Governance would be meaningless and the Practices of Habitation simply would not be present in the system at all. These practices are central to the system, not just in space but inasmuch as they represent a crucible through which the system is given physical form.

4.2.1 Design Practice

As noted above, the design practice of the Blackdale system comes in two parts with the overall goal of setting out a general vision for the development and delivering it. It would be easy to say that DDesign was strictly involved with setting out the vision and BDesign purely focused on delivery but that would be an oversimplification. Both carry a portion of the other's goal but with slight differences in the understandings of vision and delivery.

DDesign's primary focus is the translation of UEA policy goals into a vision for what the new development might look like and an idea of what practices will take place within it. This is done through a consultation process, with stakeholders combining insights from professional and everyday practice from both professional practitioners and intended users of the final buildings. Users in this case are the facilities and maintenance teams that will operate the building while the residents are largely represented by the Student Experience as supplied by UEA policy. The substantive output of DDesign is the production of specifications that will then inform further construction practice.

The specification for the development bounds what can and cannot be included in construction; it represents curation of both elements and practices of construction. As an example, one of the defining elements of this development was the cross-laminated timber (CLT) superstructure, which brought with it slightly different practice in terms of design considerations, skills, and coordination times. Rather than the more common

steel frame which can be assembled onsite, the CLT frame was constructed and effectively flat-packed for shipment to the UK. This required a certain amount of coordination ahead of time along with coordination with design practice as, as the next quote demonstrates, CLT requires more careful visioning for its use.

“On this building, we’re very sensitive to holes in the structure because the CLT forms the structural framing, we’re obviously sensitive to holes going through it, especially unplanned holes. You can’t just come to site and say, ‘actually we forgot, we need a big hole through that wall’. ‘That wall’ may be holding up, maybe 5/6 stories...”

Senior Design Manager (Contractor) 9:08

The CLT was the main difference noted by practitioners involved and was a key point tying the design and construction projects to learning practices because of the process through which the panels that form its structure are designed.

“CLT was a very important one. One of the main reasons why UEA wanted this in a BIM environment was for the manufacture of the CLT. That’s all done by a computer-aided design and that will then write the programme straight to the shop floor which will actually manufacture the panels.”

Senior Design Manager (Contractor) 8:16

Another key part of the DDesign in this system was a greater emphasis on coordination of practice ahead of design completion. Relationships with stakeholders, both on campus and in local policy groups, are maintained between developments to speed progress through the design phase, specifically in the case of local planning.

Once the design has been agreed upon to the satisfaction of stakeholders, it is put out to tender and once a tender is agreed then the BDesign stage begins. As a practice, BDesign seeks first to secure the tender before finalising the design during and alongside the construction process, with amendments begin constantly made to streamline the process as it continues. This approach allows greater flexibility and capitalises on on-the-ground knowledges from practitioners who might have decades of practical

experience. It also provides an opportunity for a contractor to make alterations to the initial design, intended to make as much space for profit as possible while managing the expectations of, and relationship with, the client along with the specification and regulations imposed from the start by the DDesign and governing bodies. In this case both groups often recruit practitioners from the same company, leading to architects from the same firm being part of both the client and contractor teams, acting on both sides of the design. These practitioners are separated by what is known as a 'Chinese Wall' whereby they, theoretically, do not communicate about the project in any other way than professional obligations that would normally be performed via email or phone. As in the case of the two architects below, practitioners occupy the same office space which allows for informal interaction to smooth over problems that might arise in a more actively competitive environment.

“Working with [Project Architect] to develop the design. The concept design, outline design, and then produce the employer’s requirements for tender and then, stay client side to ensure the [B]Design, as it’s being developed further stays with, as, to the original design intent”

Senior Architect (Client) 1:36

Alterations to the initial design often come in the form of element curation through the procurement of cheaper materials that still meet the same design specifications. In one case the water delivery system was redesigned to use a smaller pump on the advice of the sub-contractors responsible for plumbing. This created a point of tension between contractor and client as it was not guaranteed that such a system could cope with the post-occupation demands of residents. That the system performed adequately post-occupation highlights the value of being able to recruit skills and experience from seasoned professionals to increase efficiency.

The BDesign also dictates where professional practices are included into the development. While DDesign dictates what can be used to attain completion the more directly involved BDesign process goes some way to dictating the temporal arrangement of when practices are brought in and understood to be completed.

Design is the foundation of construction practice, arguably the single most important governing factor over the Blackdale development. It sets out the goal of a development, ties in policy regulations and steers the actual construction process. The design and the process of its implementation define what the final product will be, enacting the brief created by UEA policy in consultation with professional practitioners. As will be discussed in greater detail in Chapter five, decisions made at this point in the development can and do directly affect residents' practice.

4.2.2 Construction Practice

Construction practice is the physical process of creating a built space within time, space and quality parameters provided by an initial brief. Its prescribed goal is just that: the physical creation of spaces. The practices involved in material construction include superstructure production; substructure production; Mechanical, Electrical and Plumbing (MEP) installation; man management; outfitting; landscaping; disabled access provision; and signage of the buildings. These do not vary much from any other development, and thus on the system map they are labelled simply as 'construction practice'. The other primary practice taking place on this site is Commissioning, which is essentially the process of ensuring that every aspect of the building works as it was intended to.

Construction practice occupies a unique theoretical space within the system of practice because it is so central to the system and yet could be considered just one, albeit very diverse, practice that is operated on by all others. The construction process is, perhaps, second only to the Practices of Habitation in being the operant unit of the system and yet it carries so little weight in terms of governance, apart from that it was completed. There is no question that had these practices not taken place the system would be very different but all they technically add is a spatio-temporal site for other practice to take place in and around as well as the data generated by that process. The centrality and diversity of the practice contained within the construction project counts for very little in terms of governance.

In terms of interventions, construction practice is responsible for recruiting, organising, re-ordering and creation of the physical artefacts of the Blackdale system. It provides a space for practitioners to carry their respective practices, which in turn then provides a space for residents and managers to operate on and within. The coordination of these practices in both time and in space is administered by project management, but it is a key part of construction practice. All practices must be performed at the right time as described by the development timetable as well as the gestalt construction practice. These must take place within a set time limit between the completion of the tendering process and the handover date; this itself must be before the occupation date, which is a hard deadline set by the University.

Two sides of the Eternal Triangle, time and cost, are contained within the construction project. This triangle is completed by the commissioning process, which ensures quality. Commissioning is performed from both sides of the D&B contract, with the contractor providing practitioners from its workforce or recruiting additional officers strictly for the purpose. The client also re-establishes contact with professionals who were involved in DDesign to ensure that the products of their design work have been faithfully replicated. This is called the 'snagging' process, and it is also responsible for catching small defects and aesthetic damage that might have taken place during construction but that do not impede the function of the building. Any defective elements are removed and replaced before certification is provided towards completion. Both of these are considered element curation. Additionally, the knowledge that this process exists implants meanings around the need for quality in construction practice. In terms of practice curation, there are multiple practitioners that are re-recruited back into this project from what might otherwise have been specialised professional roles to offer aspects of their own practice as insights. This might be more a case of practice coordination as it effectively weaves practices back into the timeline of the development that might have otherwise be understood to have completed their performance long before.

Arguably the central point of the system, construction practice does not, in itself, govern in the sense of being a Practice of Governance. It is a conduit for governance coming from elsewhere, providing a stage for the governed practices. Construction practice

provides the physical manifestation of the legal frameworks evidenced in the various policy spheres. It is absolutely shaped by the whole system but at the same time does much to shape the rest, if only by drawing or tying that system of practice into this spatial location.

4.2.3 Project management

Project management is connected strongly with construction practice. It refers specifically to management of the Blackdale development through project administration, a project carried jointly between UEA Estates staff and outside consultancy, and contract administration, which refers primarily to the contractor's management of the construction process. The shared goal is to ensure that the development is completed within the constraints of the Eternal Triangle set out at inception.

Risk management is the primary practice contained within the project administration project. Whilst this is discussed in interviews as a specific, and relatively self-contained, activity, here it refers to the intentional steering of the elements of the development, anticipating and dealing with potentially derailing risks and subsequent issues.

“So a risk is, you may find unknown ground conditions. So you might find a sinkhole, worst case... So that's a risk, how do we mitigate that risk? With site investigations, we'll do some trial pits [...] [if] you find 'Yeah, we have got sinkholes' you take it off the risk register, you put it on an issues log. So this is mitigation, this is actual action”

Project Manager 4:18

Elements curated through this process involve meanings around responsibility, reflexivity and cooperation in order to deal with problems ahead of time. There is also some curation of skills in terms of recruitment of experiential skills and know-how around previous developments and how issues might have been dealt with before. Practices curated here are those around a continual monitoring and reporting as well as visioning and reflexive management. The project manager role specifically carries these

practices and is recruited early in the development to perform risk analysis in real time during the construction phase.

Practice coordination is the primary outcome of both aspects of project management which act as bindings that marshal Practices of Construction together and control their interactions. As construction progresses, practices need to be timed in such a way as to deal with problems either before they happen or very swiftly as they emerge, given the limited timespace available. Whilst contract administration is primarily invested in making sure all elements fit together, risk management is focused on-making sure that aspects fit cleanly together or that sufficient 'space' is made for reaction to incoming problems to not overly slow down forward progress.

"I'm the principle contact for the client team. The UEA is represented by [Project Administrator] and [Project Manager] [...] for the client's team. So [Project Manager] and I are the principle points of contact for each side, if you like. It entails sitting in a lot of meetings and filtering that information back to the rest of the team."

Contract manager (Contractor) 1:29

As noted above and evidenced by the quote, each side works to coordinate practice towards their own goals as well as disseminate information between themselves and allow smooth conjunction of their own practice. This is also an aspect of the relationship management (4.2.6) that is critical to the success of the development. Contract administration is primarily concerned with managing and coordinating practices of construction in concert with the sub-contractors and client.

“Ensuring the [B]design is resolved, to allow us to procure. We have to procure a number of sub-contractor packages, making sure that they meet the employers’ requirements and make sure they fit within the budget [...] make sure they arrive on site on time, make sure when they arrive on site they’ve got everything from a health and safety point of view, and attendance point of view, making sure preceding trades have completed their works, making sure their works are completed to allow the following trades to complete their works.”

Contract manager (Contractor) 2:21

This quote perfectly encapsulates the role of Contract Administration within the context of this system of practice. Element curation, specifically in the case of artefacts brought in through procurement, is dictated by BDesign, conforming to the DDesign specifications. Sub-contractors’ packages represent practice curation as an almost perfect analogue since each is recruited to add particular practices to the development as well as some specific bespoke artefacts brought in by practitioners. Practice coordination is virtually the entire role of the Contract Manager, with the other effects being incidental. Every aspect of the development must be timed in such a way that practices do not clash and that materials are available at the time they are needed for construction. Time also needs to be dedicated to ensuring sufficient quality and payment for services.

Project Management is very much a governing practice, or rather a set of governing practices, and quite a good example of reflexive governance within this system as ongoing learning and visioning are part of these practices. However, in a similar way to construction, project management could simply be a conduit through which policy and design practices are enacted. It steers the prescribed construction practice through management practices, while really just holding that process to the specifications that were set out at the start. These initial criteria were in no small way influenced by the project management practitioners, particularly the project administrator. This role was present from inception, responsible for much of the design process and for enforcing that specification during construction. This constant steering by one practitioner rather than one particular practice leaves this question of steering vs. enforcement open to further inquiry.

4.2.4 Professional bodies

Professional organisations perform many functions, but in the same way as the Practices of Governance they are here identified by what they bring to this system in particular. Interfacing mainly with the professionals involved in the D/BDesign process and construction, professional organisations define and curate professional practice by providing ongoing training and updating practice with new elements through continuous assessments, Continuous Professional Development (CPD) programmes, and conferences.

The goal of CPD training is to constantly update professional practice with new elements, standardising the level of professional practice across all practitioners and giving newer members of a profession a benchmark of quality when they might have limited experience to exhibit this so early on in their careers.

“I’m a member of the RICS, so I attend various RICS events. They do various CPD events where they’ll do seminars and workshops and you try and keep up with various changes in legislation or just things that basically help you to continue to stay abreast of times in the industry.”

Senior Surveyor (Contractor) 19:44

Element curation and coordination are exhibited in the above quote. New elements are implanted into practice as entity through general CPD, and links with other systems of practice are maintained and strengthened. The former could be the addition of practice around BIM for designers, which had been introduced relatively recently and are increasingly becoming part of professional practice, as well as slowly becoming part of practices of tradesmen and sub-contractors which then submit information to be added to BIM. While legislation is foundational and taken as something of a given in design and construction practice as laws change, standards need to be periodically updated.

Professional bodies provide a conduit of those elements to be implanted into practice. Professional bodies, specifically the Royal Institute of British Architects (RIBA) can also provide frameworks for timings and coordination of work. The RIBA Plan of Works (RIBA 2017) is a standard for the order in which sections of a development should be

completed, from making a business case for new construction to when it is actually in use post-handover.

“RIBA have a plan of work, from stages 0, which is project initiation and strategic level stuff, to 7, which is hand over the keys and everything in between. We usually go to stage 4, which is planning.”

Project Lead / Technologist (Contractor) 1:36

There comes a point at which new elements of practice can be considered practices in their own right, creating new professional niches to be occupied by practitioners. This might not, strictly speaking, be practice recruitment but the effect of practitioners carrying new practices is the same. In this case, the organisation of the BIM model was handled by the Technologist and the Senior Designer on the contractor side for much of the development before being transferred to the client (UEA) at handover. Both of these practitioners might have been attached to the development otherwise but not in this way, at the point at which they were interviewed or through this particular practice.

“In the design management role, you usually disappear at Stage 5, you would be gone onto another project. We made the commitment here that as [...] 1. The MEP was important and 2. The BIM was important [and] because I’d had the experience in both, that I would stay on to the end of the project.”

Senior Design Manager 32:15

Another effect of professional bodies is the authentication of professional practice. This authentication legitimises and defines professional practice to allow it to be taken as read that a practice will be performed to a given standard.

Authentication in practice could be considered either an artefact or a meaning that itself is representing skills. It is clearly a key part of the understanding of professional practice as many of the interviewees brought it up when questioned on their ‘skills’ or where their authority to act might stem from. In terms of practice curation, chartering, the most common manifestation of professional authentication at Blackdale, enables the

recruitment of specific and standardised qualities of practice to construction or design practice.

Coordination in this context is achieved not through temporal or spatial arrangement of practice performance but through the relative weighting of particular practices in terms of viability for recruitment. Practices that carry with them the elements around accreditation will be recruited over ones that do not. It would not be true however to say that professional practice was only that which carried accreditation because other factors influence recruitment too, as noted below.

“It’s just a matter of how many years you’ve got, and what people have asked me before, you know when they’re just starting out doing their stuff, and my view is just, completely, between, or up to 30, in terms of age, these qualifications mean everything, and you’ve got a bit of experience that goes back. Once you’re past 30, and you’ve got then a fair bit of experience that goes back, and you can describe that experience, then the qualification means less and it’s, what your experience is, means more.”

Project Manager 44:15

Similar to the way in which construction governs the system without any intention to do so, professional bodies have a huge effect on the system by in effect ‘constructing’ the professional practices that then go on within the system and enact its outcomes. To this end they could almost be considered to carry Practices of Governance. The reason they are found within the Practices of Construction is that they do not govern any particular part of the system so much as form part of the larger complex of projects making up construction. Much like the academic Practices of Habitation, home life and those of construction, their presence might be better visualised as a tangential force coming from another dimension entirely.

4.2.5 Learning practices

The learning practices in this system are those that gather information from the development along with, by extension, previous projects to inform current and future construction and policy practice. Learning practices are a key part of this development

and considered to be one of the primary reasons for its success. The goal of these practices is that of facilitating knowledge transfer between practitioners as well as more stable relationships between practices within the system and beyond. This is achieved through a process of continuous knowledge generation and consolidation.

“‘Understanding’, number 1. Not necessarily ‘why?’ but it’s a good place to start. Why is it going that way? What can we do about it? And if we can’t do anything about it, what do we do about the fact that we can’t do anything about it? [...] and ‘Learn’ would be the last bit of that puzzle, don’t just keep making the same mistakes, and let other people know you’re learning.”

Project Administrator 1:01:37

Knowledge generation is a key part of reflexive governance. That is to say, governing as a learning activity (Sendzimir et al. 2006, Hargreaves et al. 2013). This goal ties into that of Risk Management as gathering information about potential issues is used to predict the incidence of others in the future.

"Reflexive governance is about enabling learning that occurs and avoiding lock-in that could limit further learning. However, it will only happen when the actor is forced to in order to meet challenges."

Schön in Voß et al. (2006 p92)

The efficacy of learning stabilises the elements of practice suited to its function within the system through its continued utility. Lessons learned from Crome Court have been demonstrably valuable to the Blackdale development. As a result, the focus on information gathering continues. Learning is of course a ubiquitous element of practice but in this case it refers to more formalised modes of, and technologies for, learning at an organisational level. Because it is often a collaboratively carried practice and concerned with information transfer as much as its production learning, by necessity, introduces meanings around trust, understanding and the value of these things in shared advancement.

Learning practices, formalised and added into the Blackdale system through Practices of Governance, include Soft Landings and BIM as well as aspects of Design Guide production. All three of these facilitate information flow as well as storing a certain amount of information for use later, particularly in the case of the higher levels of BIM and the UEA Design Guide. Both of these are expressly dedicated to producing information that can be used to inform practice beyond this system. Coordination of practices is required to facilitate data transfer, which is partly the function of SL. However, shared data and even the act of sharing it can increase links between practice and thereby add cohesion to projects and the wider development. In theory this also makes for more efficient management, although an abundance of data alone is not necessarily a boon. Knowledge consolidation is key to converting raw data into a useable tool for governance. In its simplest form it represents limited clashes between design elements, achieved by the digital environment of BIM:

“[A]ll the different software would talk to each other. We had to convert it into an IFC format, which is an industry standard. But strange things happen when you convert from the native files into IFC file and then try and get intelligent data out of that.”

Senior Design Manager (Contractor) 4:40

The production of one cohesive image from many is a convenient analogy for the utility of knowledge consolidation in other parts of the system too. Drawing on the input from multiple sources as well as freely sharing the results of that process helps to ensure the stability of the design vision throughout the construction process and into use. This means that the Practices of Habitation are organised and curated in such a way as to use the building as specified in DDesign. In terms of element curation, consolidated knowledge engenders meanings around cooperation and cohesion, with practitioners being more aware of their roles. As noted in the quote above, there are skills and materials involved with federating the information such as a working knowledge of a wide range of software.

The SL process brings significance to practices around familiarisation with the physical area, both during construction and post-handover. Site tours are intended to introduce

those involved in Management Practices to the intended use and expected practice post-occupation. A great deal of coordination is required for this consolidation; SL involves organising additional meeting times and spaces. There needs to be more communication between designers, both D and BDesign, as well as between practitioners recruited by the contractor in order to ensure that data is ready for handover. This requires practices to be aligned and acting, at least to an extent, in concert.

The focus on learning is one of the big success stories of the Blackdale system, allowing it to progress as smoothly, quickly and efficiently as developments such as Crome Court which was half the size but was completed in the same time. Learning practices and elements allowed this development to build on knowledge gained from Crome Court and refine its techniques in knowledge generation, as well as in construction.

“Makes sure the job gets done and everyone enjoys the job and everyone reflects on the job. Saying that’s the best job they’ve ever worked on which is brilliant to hear. Nobody wants to go, everybody wants Phase 2 so they can have the same thing again. So yes, deliver a good project which is one that everybody can reflect on.”

Assistant Site Manager 15:21

As the above quote reflects, the Blackdale development was a relatively harmonious affair with both groups looking forward to phase two with enthusiasm. The sharing of knowledge played a key part in ensuring that a contract system intentionally designed to be antagonistic was relatively peaceful and harmonious. Both sides were not only more aware of information but more willing and able to share it. Knowledge produced during the development improved handover smoothness as well as helping to create frameworks for data production and retention post-handover which in turn helps for visioning on the next phase.

4.2.6 Relationship management

As a practice, relationship management is ubiquitous and exists at several levels within the development and the wider temporal context. In this case it refers specifically to the

practices of consultation around and codification of practices involved in the development. These develop both a framework and, to an extent, a historical narrative that can inform practice (specifically recruitment) later on. The overarching goal of this project is to facilitate relationships as part of learning experience and ensure that positive interactions are rewarded and continued.

Consultation goes hand in hand with knowledge production in that its goal is partly to ensure a constant connection and understanding between practitioners. More specifically though, and to differentiate the two, the goal of Relationship management is to maintain relationships within the system but also temporally outside it by facilitating links and information flow between practitioners. Both are strongly associated with informal, but increasingly formalised, meanings of trust and security between practitioners and organisations. The understanding that by acting in good faith there will be continued positive relationships reinforces and stabilises these elements of practice. The codified framework also inoculates university staff from accusations of corruption by formalising and codifying what was previously informal.

“We’ve got some trust, and it works. That’s quite tricky with private procurement because in theory, you’d pay a little bit more to get that and make sure it works, but, it’s not cheapest. You can’t prove you’re picking them because of that process, if you got questioned [...] Where’s the brief? ‘I don’t know’”

Head of Engineering 1:16:39

To an extent this building of relationships is what the recruitment Soft Landings is intended to achieve and it does succeed but only in more formally recognising relationships that would likely be developing in its absence. The relatively close relationships between the University and the available contractors is partly a function of its efforts to build and maintain good working relationships but also a function of the local environment.

“We’re always talking anyway and if the communication’s good, you don’t get into those debates. If you’re in London, it’s quite cut-throat. Norfolk is a really nice place because it’s a small world in Norfolk. You will come across each other, everyone comes across each other, all the time. So, it’s much easier, whereas in London, or, somewhere, Cambridge even, you, chances are you won’t come across people again, so [...] you’re less likely to be difficult or awkward about stuff.”

Project Manager 20:01

Keeping these positive relationships between interactions as well as during them is valuable, and this is recognised by the University. Codification practices such as the recently produced 2016 Contractor Framework (Appendix 7) work towards empirically ranking connected practitioners by utility of practice to ensure that positive interactions are continued and repeated. In practical terms the framework is a league table, with a series of key performance indicators for previous work that can be used to decide which practitioners best suit the University’s aims and needs for a coming project. The UEA Design Guide curates the artefacts and recruits practices whilst the Contractor Framework curates meanings and skills. The Framework vets possible contractors against criteria that may supersede absolute costs. This goes some way towards giving concepts of quality more prominence within the Eternal Triangle, where they might previously have been subservient to cost and time. The Framework also represents an understanding on behalf of the client that positive interaction will be rewarded and a focus on honest relationships may foster more interactions in the future.

Coordination of practices can be seen in the relationships between the University and local planners. This is not just in terms of temporal organisation in terms of pre-application lead times with planners but in the maintaining of a deeper and more positive working relationship.

“[The planners]’re part of the team, and made to feel that way, and then they start to feel as if they have some ownership of the project, and its success, in the same way the rest of the team do. The project then looks very similar to them as to us, not have them as an outside body.”

Project Administrator 1:10:48

“Meetings with the planners were quite important to get them on our side which we had only a few of but it was right from the beginning it was really important to get the planners on board because it’s such a big development. But because they were so pleased with what we did on Crome Court they were... I think we had it quite easy for them to be on our side, and believe us.”

Senior Architect (Client) 13:53

Relationship management, as noted, is another ubiquitous part of any organised practice; Blackdale just happens to be an excellent example of it being performed effectively. It facilitates ongoing learning and ensures continuity between projects as well as harmonious and smooth progression of planning, construction and hand-over. It is not a governing practice in that it steers in a particular direction, but it does a great deal to reinforce the pathways through which practices and projects progress in time.

The Practices of Construction firstly create the physical space in which the Practices of Habitation occur. Additionally, their performance does much to influence wider systems of practice in temporal terms by generating data and stabilising relationships between practitioners. Practices of Construction act as an agent for the Practices of Governance, giving physicality to the interventions enacted through Building Regulations or the UEA Design Guide. Management and learning practice connect the Practices of Construction in time to previous and impending developments as well as both smoothing and extending relationships with practitioners from outside.

4.3 Practices of Habitation

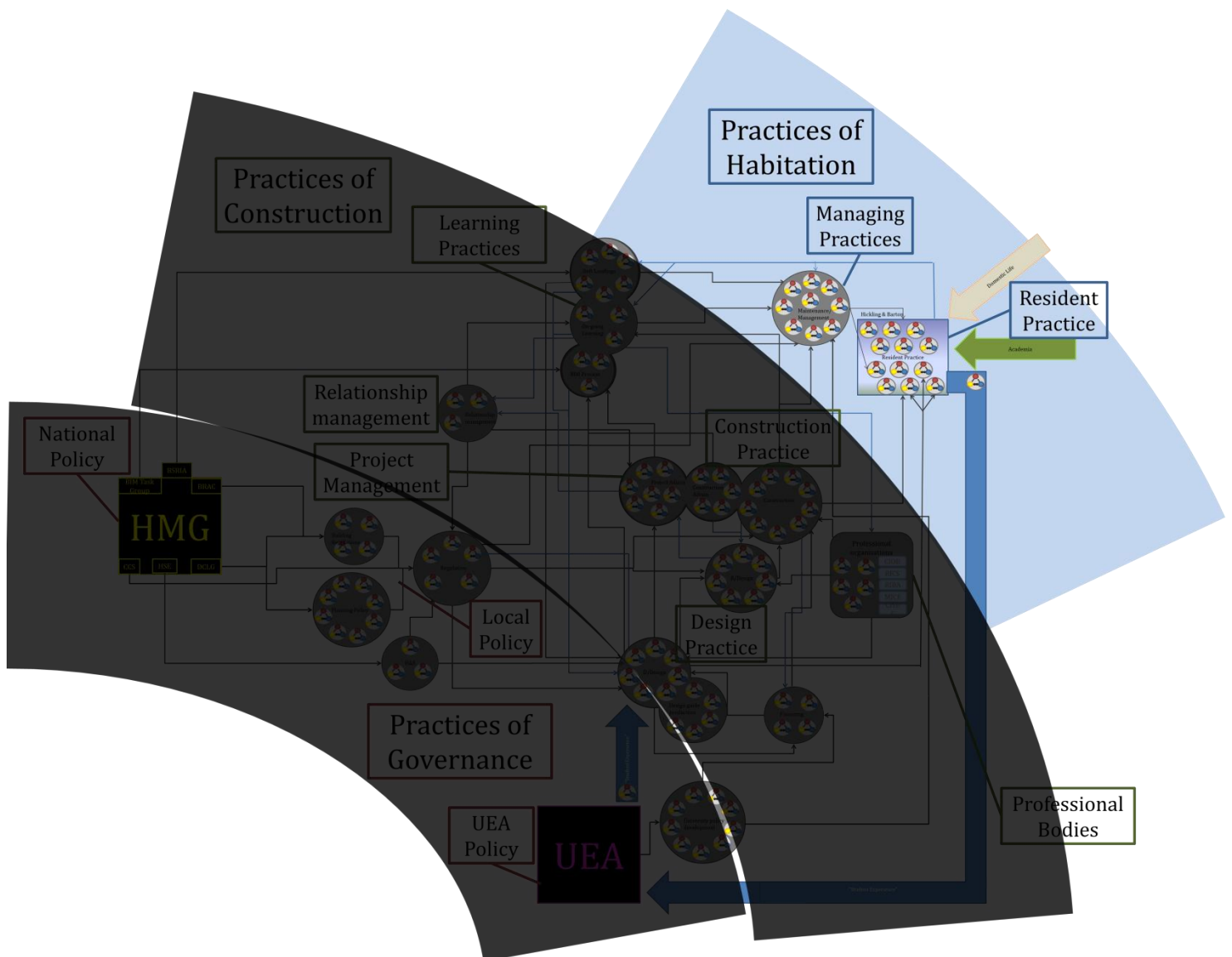


Figure 4.4 Practices of Habitation map Blue band, indicating the Practices of Habitation section of the Blackdale system map

The Practices of Habitation are the practices of everyday life centred on the finished products of the Blackdale development, Hickling House and Barton House, post-occupation. They are split between the professional practices of those managing the residences and those carried by residents as part of their everyday life. Management practices were ascertained from much the same process as those of the rest of the system’s practitioners. Meanwhile the residents’ practices remained largely insulated

from direct outside intervention and were ascertained through a slightly different interview process, as discussed in section 3.3.3.

Both of these groups are composed of wide-ranging groups of practices with only management practice sharing a uniting teleology. In terms of component practices the management project is one of the most varied, with nearly every practice coming from a different University department. Arguably, it should be a collection of smaller projects because it encompasses such a large range of different actors and departments. However, management project remains united by their purpose, maintaining and managing the building and dealing with data and material coming from practice performed within it by an 'ungovernable' student populace using only limited authority. As a result they are grouped into a single project, and the practices contained with management are grouped into 'Maintenance', 'Monitoring', 'Security' and 'Facilities Management'.

Residents' practices performed within Hickling House and Barton House are largely the kinds of practices that would come under 'everyday practice' at any other SPT exploration of domestic practice. Cooking, washing, showering, entertainment and socialising would be expected in almost any domestic environment, albeit perhaps with different arrangements of elements. One exception in this circumstance might be studying, but of course this is hardly exceptional in the context of university accommodation.

As they are, to an extent, the outcome of the Blackdale system, these ongoing practices represent a key point of potential feedback to the rest of the system. Data are gathered both from and through management practice via ongoing learning practices. The student experience is used to both judge the efficacy of and drive future UEA policy as the Student Experience. It is difficult in this case to determine a governing relationship; while power would seem to be in the hands of those managing the residences and their operation, more often than not managing practice is determined by resident practice. Partly this is due to the intentionally reactive nature of management practice, dealing with complaints and feedback being a significant aspect, but it is also true that the pre-

eminence of the Student Experience in UEA policy plays a role in determining and shaping managing practices.

The preceding Practices of Governance and Practices of Construction create the timespace for the Practices of Habitation to be carried through. Here, they enable and support with relatively little intervention when compared to the instrumental Practices of Governance to Practices of Construction relationship, whereby they are given a budget, a path and an outcome. In this case, managing practices are given a budget and an outcome but very little authority to govern. Meanwhile student practices are given space and time, almost no direct governance inside that space and significant authority to determine future practice within the next temporal iteration of the system as the Student Experience.

4.3.1 Managing practices

Managing practices serve three primary objectives: maintenance and protection of UEA building stock, facilitating the student experience, and enhancing the Student Experience. These are achieved through maintenance, monitoring, security and management of facilities.

Maintenance in the case of Hickling and Barton is split between basic, reactive maintenance (i.e. the response to everyday problems of residence that might arise anywhere due to residents' practice or issues with plant) and keeping track of issues associated with this new build. Element curation is relatively simple (the replacement of faulty items) but also introduces meanings around security and the sense that things are under control and being looked after.

“The maintenance that they do for us is a lot more, heavier, than I’m used to. They’ll clean it all, like fix a lot of things, even when I don’t know what’s wrong, they’ll fix it.”

Student 13FI 25:41

The only example of practice curation is the secondment of maintenance practice into those of accommodation through the relocation of practitioners into the Accommodation Office. This is not strictly a practice being added or taken away, but rather being joined to another group of practices. This might just as easily be considered practice coordination, and indeed maintenance has quite a lot of interaction with the rest of the system. This ranges from coordinating with the SL process to better understand the buildings and plant pre-occupation, to utilising the Building Management System (BMS) to address issues as they develop. The BMS is an digital system that automates temperature regulation, and logs and reports issues to maintenance and engineering practitioners.

“You’ll find anyone working in the BMS has no end of interaction, because it’s the hub of all data, all information. So, [Head of sustainability] needs to speak to me. He relies on the BMS to provide him data, same with the Engineering Team, same with the Maintenance Team, same with Security.”

BMS Manager 12:49

The BMS and the practitioners it connects carry much of the monitoring practice involved in Management practice. The goal is to gather and disseminate data that can be used to inform practice later on. These data are also used by the Sustainability Team and are then passed on to the Project Team to inform the DDesign practice for future developments on the UEA campus.

“Part of what [the Sustainability Team] do, and a lot of the information we give, to the Project Team. So we’re there to help, and to suggest at the design stage and during the build stage.”

EMS Manager 7:34

Monitoring practice not only enhances reflexivity in practice, allowing information to inform practice in near-real time, but also connects to ongoing learning practice to inform future systems of practice. If reflexive governance is governing as knowledge production (Sendzimir et al. 2006), it is this practice that facilitates that within this system.

Security is a large part of Student Experience. In terms of practice, Security involves the protection of students and of UEA property. Security involves monitoring the buildings as well as being the first to respond to many issues with them, and as a result some element of that security practice is constantly 'present' in the physical area even if the practitioners may not be.

The presence of, or more accurately the necessity for, security practice necessitates a certain number of artefacts to enable it. Cameras and electronic locks, under the joint control of Security and Campus Support, are included in the Blackdale development to facilitate security practice. There must be a certain amount of coordination between practices of construction, design and planning because these elements are built in.

“We can make recommendations, we can't stipulate. I can stamp my foot sometimes and get my own way but, hey, we're still at the mercy of planners.”

Head of Security and Campus Support 12:17

“I wanted to get interaction at the beginning, so that my team can manage the building going forward, if I get involved at the end it's too late, because the cabling's already been pulled or they've placed something where I wanna put a camera. It's about that early involvement so that we can end up with a building that my team can manage.”

Head of Security and Campus Support 33:50

While still to an extent being limited in scope by governing forces outside their own practice, security practitioners provided knowledge through SL that involved site visits during construction to allow professional security practice to influence the BDesign and improve the effectiveness of security efforts post-occupation.

“We made the arrangements with [SL Manager] to send the teams across when it was nearing completion whilst it was still a construction site to give us an idea of lay of the land [...] so that it wasn’t a complete surprise to us. That also gave us an opportunity [...] at that point we were altering, you know we spotted a few of the cameras and a few of the blind spots that were going to be apparent.”

Head of Security 37:07

Facilities Management combines management of the UEA grounds and cleaning practice. The goal is simply to ensure that the campus is a pleasant place to be in order to enhance the Student Experience. This, however, belies the more informal interactions involved, particularly between cleaning practice and student practice. Both literally and figuratively, cleaning practices almost the only practices that physically manifest inside the finished residences. Obviously cleaning staff go in to clean but, more pertinently to this study, they are the only group with direct, regular interaction with residents. Cleaning staff have a role in knowledge transfer and element curation around waste disposal and practices around cleanliness but also around sustainability. Staff are responsible for placing pro-environmental materials such as posters and fridge magnets into residence kitchens.

“One of the ways that we’ve tried to raise awareness of waste and recycling at the beginning of this coming academic year is to put magnets in all of the residence kitchens as well as labels on the bins, and also posters around those same rooms.”

Environmental Officer 4:43

These are interventions based on an information deficit model but do still have the effect of curating meanings and skills around everyday practices connected with waste disposal. There are also more direct and even less formal interactions around knowledge transfer, where cleaning staff perform a direct educating role around what can and cannot be recycled.

“Cleaners, yeah, ok yeah a little bit, say ‘Hello’. She tells me all the stuff that I can’t put in the recycling bin.”

Student 1M 32:58

Cleaning practice represents one of the only obvious links between the ‘ungovernable’ everyday practices of students and the Blackdale system, as most other interactions are directly with the buildings themselves and only tangentially involved with the practices of residents.

Management practices are many, varied and almost defined by their lack of explicit governance over residents’ practice, despite being in what on the surface might appear to be a ‘governing’ position. They are responsible for managing the environment much more than the practices themselves, managing inputs and outputs of practice rather than performances. Many are engaged in practice campus-wide and so would already be operating independently of the Blackdale system. Blackdale is, if anything, just an additional burden on practices that would be taking place regardless.

4.3.2 Resident practices

Student practices are represented in a visually different way to the projects in the Blackdale system. This grouping of practices stands apart from the projects because they lack a unifying teleology. These practices are instead linked spatially, taking place within the ‘ungovernable’ box noted in the quote below. The everyday practice of residents remains strangely insulated from the rest of system.

“...because you have 500 taps all needing hot water, you’ve got 500 sockets, you’ve got ungovernable student body in there, who’ll plug in laptops and computers and hairdryers and hair curlers and expect to live the same way they live at home and don’t respect, what that building’s about.”

Project Administrator 10:01

Student practices are remarkably isolated from the wider Blackdale system. Interventions from the Practices of Construction either stop at, or rather with, the walls, or in the case of management practice effectively work around student practice. Only

four resident practices are recognised as being governed in any way by practices taking place outside. Cooking, washing/showering and socialising are affected by series of decisions taken early on in the DDesign process intended to make the practices taking place within Hickling and Barton more sustainable. Cleaning also governs through the provision of information by cleaning staff. The main point of interface with the rest of the system is the Student Experience, which is of course generated through student practice and then captured by the University through evaluations and surveys. Gleaned information is then processed by UEA policy practice and fed back into the system of practice as the Student Experience proto-practice, being the University's understanding of what students want, need and respond to.

When questioned on which aspects of student practice they might have a direct influence on, most carriers of managing practices noted only punitive or outright vindictive interventions such as punishments for damage, locking all the doors or turning off the heating.

“I could completely mess up their day and shut down the CardAcc[es]s. They couldn't get in, for instance, but why would I want to do that, unless I had a specific reason to. I want to protect them, so I'd only do something if there was a threat, some reason they couldn't occupy it.”

Head of Security and Campus Support 36:31

“In terms of the BMS, it controls the heating. Yes, I can make them very cold, or, if it went wrong, I could overheat them as well if it went wrong, so yes, in terms of their internal environmental conditions yes I have quite an influence on what that would be.”

Head of Sustainability 29:00

The question these two quotes answer concerned the direct interventions that carriers of managing practices could make into student practice. The responses speak to the inability to directly govern student actions, but instead the ability to set the context in which they occur.

The practices of residents are performed simply as part of everyday life and do not directly govern anything that happens in the rest of the system. In order to identify that interaction it becomes necessary instead to see which practices are intervened in, what the interventions were and what they were intended to achieve. Cooking was the only practice that all participants stated they carried, although the elements of that practice varied greatly. The intervention in this case was that of “The Button”. The button is a device included in all student kitchens within Blackdale, allowing the use of the cooker. If the button is not pressed every 30 minutes, power to the cooker cuts out and it shuts down. The button was conceived as an intervention for sustainability through limiting energy waste but it was included in the design brief as a safety measure, limiting the risk of fire from unattended cooking. As an intervention it represents element curation; it is itself an artefact but also brings with it technical skills in its operation and time management considerations. In terms of coordination it theoretically means that students would spend more time in communal kitchens as they would need to more closely monitor their food if cooking something that took more than thirty minutes and thus increase the use of this timespace. However there does not actually seem to be any evidence of this as a result of this particular intervention. Reactions to the button were mixed; some students did not understand what it was, some had to be instructed in its use, some grasped immediately the intentions behind it and one even stated that they disapproved as it ‘wasted’ energy.

Washing, or more specifically showering, practice was strongly affected by the materials available within the shower ‘pods’ but was otherwise not intervened in. The shower pods are self-contained, naval standard, sealed, showering rooms that also each contained a sink and a toilet that made up the en suite portion of each room. En suite rooms are viewed positively by prospective students and as a result are included in most new accommodation in order to enhance the Student Experience and help ensure that the residences were fully occupied. The intervention is primarily one of element curation, creating a specific environment and providing artefacts within that space but otherwise leaving the practice of showering largely unchanged. The difference came in the coordination of other practices. Because of the nature of isolated showers and a transition from home life to this new environment, students noted that their practices of showering changed. Students were no longer having to share a shower with anyone but

were still sharing an environment with others and as such the relationships between practices changed.

“Now that I’ve moved, probably shower more, because before I was like ‘Ah, don’t really need to leave my flat’, so, or leave my room. Not saying I didn’t shower or anything like ‘probably once a week’...”

Student 20M 34:11

This quote refers to a previous admission of taking more, shorter showers due to not enjoying the use of the shower pods compared to those at home. However this was counteracted by a tacit social pressure to remain clean in order to socialise with new flatmates, leading to more frequent showers.

Entertainment and social activities were intervened in here by the inclusion of social spaces – shared areas explicitly intended to be used communally for social interaction. In addition to shared kitchens, each flat had an adjacent social space. The concourse between the two houses was outfitted with benches and spaces where students were expected to congregate. Additionally, and uniquely among the residences at UEA, a small café and social area was included in the central building to give students another area to meet with each other. This again was intended to enhance the student experience and quality of life as well as introduce the development of social skills and make the residences more appealing to prospective students on viewing. Element curation included social skills and meanings around shared spaces being connected to practices carried within residences. Actively communal practices such as shared entertainment activities and communal cooking now took place within these spaces. It would be impossible to say that in a less explicitly social environment these activities might not have happened anyway, but it is important when thinking of the intended use of those spaces that they were given a specific timespace and subsequently were enabled.

Interventions in student practice around cleaning and waste were less deliberate than the interventions above as they were all formed during the design process, while cleaning interventions were more incidental. Cleaning staff were present and performed interventions but that was not the intention of their practices. As discussed in the

previous section, cleaning staff were responsible for information provision towards sustainability goals as well as in some cases informing residents about the more operational elements of waste disposal. It was not unknown for cleaning staff and materials to entirely introduce the practice of recycling to new residents who had not performed it previously, and as such this qualifies as practice curation.

Having discussed some of the key practices noted to be a part of the student experience it is now necessary to address the significance of this key feedback and its effects on the system of practice. Since it does not share the unifying goal of a project or the 'iron fist' of policy it is difficult to quantify the impact of student experience within the system, or even if it and the Student Experience can be considered to be a single entity.

“We can only feedback on what we’re fed back on, if you know what I mean, and the University’s moving towards more of a customer-focused drive. The students are our customers therefore we need to meet their needs.”

Head of Sustainability 17:44

This quote suggests a change in the relationship between the University and students in recent years as well as a subtle disconnect between the student experience as it is performed and the Student Experience as it manifests as a policy goal. The Student Experience features in a great many of the elite interviews as a driving force behind decision-making, and exerts huge force on the development and on management. However it seems remarkably fractious when looking at residents’ experiences of it, with relatively few unifying themes aside from the most mundane of practices. In order to place it in the system it takes two roles: as a feedback into the University from, in this case, the practices of residents within Hickling and Barton Houses, and as a driving force coming from the University power structure into the initial design process and Design Guide. The following quotes highlight the multiple interactions between the system of practice and the Student Experience:

“I state it as the principle aim of a building is to promote an unparalleled student experience. [...] In Part two [of the Design Guide]: Architecture and Development Context, its audience is architects, and that’s where we have promoting of Student Experience and recommendations as to how that might be achieved”
Head of SUE 32:34

“The purpose? Yeah, it’s part of the Student Experience really. You know, they’re renting rooms, you know, for a period of time, some of them are quite expensive, and [they] expect a decent service.”

Maintenance Team Coordinator for Accommodation 12:27

Combined, these quotes suggest that the student experience is a powerful influence at multiple levels of construction and management but that it is not at all well-defined. The first quote is telling because it expresses how the student experience impacts the very fundamental levels of a building’s design and from a very early stage but without strongly defining what it actually is. A little later on it is explained that the impact of architecture on the student experience should be to ‘surprise and delight’ and while that is indeed a worthy goal, it does not suggest what the impact of the design might be from that point on. The second quote indicates that the focus on the student experience pervades and governs practice that might not seem strongly connected, like the maintenance of engineering plant. The following quote hints at the shifting of priorities of University policy around delivering services in exchange for direct funding.

“We’ve got a number of [KPIs]: we had to achieve a 98.5% level of occupancy. We also have a particular income target... We are looking at target achievement for things like the student experience [...] that’s how we measure, broadly, what we do in terms of financial targets and quality of service”

Head of Accommodation 15:20

This quote gives some indication as to the interaction between the student experience as a consultation exercise and its relation to funding despite being two theoretically separate indicators of performance. Managing and shaping the Student Experience can be considered the primary business of the University as it is considered to be both an

indicator of quality in terms of output and the primary means of garnering funding through attracting new students to the university. Since the shift of university funding from HEFCE to student fees this has become more prominent, as noted by Royston (2016) in the following quotation.

“Now that much of HEIs’ income is from tuition fees, recruiting students is essential to their financial survival. This has made Student Experience a priority, guiding policy and planning across virtually all university functions, and creating new temporal patterns (e.g. the extension of opening hours for libraries, computer rooms, launderettes and help-desks). This agenda also governs the provision of spaces, facilities and equipment; e.g. accommodation is becoming larger, with more en suite bathrooms, and internet connectivity is expected everywhere, all the time.”

(Royston 2016 p10)

Because of this focus on the Student Experience, design and construction projects are pushed towards elements that are considered to enhance the student experience. Specifically this is driving a move to better quality, but more expensive, accommodation. While the University’s push towards sustainability, at least in terms of operating costs, continues to be a driver of its practice, the Student Experience represents another powerful force which, while not actively conflicting, does have the capacity to derail that goal.

Knowing the intentions of the interventions noted in this section it is definitely possible to find some evidence of those intentions being played out, but results were varied due to the ungoverned and chaotic nature of resident practice. Some performances of resident practice simply did not interface with outside influences, some accepted them but reacted in a way that designers did not necessarily intend, and some intuitively incorporated them into practice. This could all be explained by the ungovernable nature of residents’ practice but it is unclear whether that nature is due to an intended lack of interference or an expected variance in practice as performed in a domestic setting (Gram-Hanssen 2011). It should not be ignored that much of the residents’ practice is informed by systems of practice outside of Blackdale with home life, previous

experience of university living or academic practice all exerting an influence on the formation and stabilisation of student practice at least as much as the environment they are carried through.

The Practices of Habitation, relative to the projects of the rest of the system, are disparate, everyday practices that lack in cohesion. They are contained, facilitated and steered through and by both Practices of Governance and Practices of Construction, which create both a physical environment and the legislative and social structures that define their performance. Both groups of practices close a governance loop with feedback either into learning practice, and by extension future development through the Estates and Accommodation departments' systems and UEA Policy in the conversion of the student experience to the Student Experience.

4.4 Conclusion

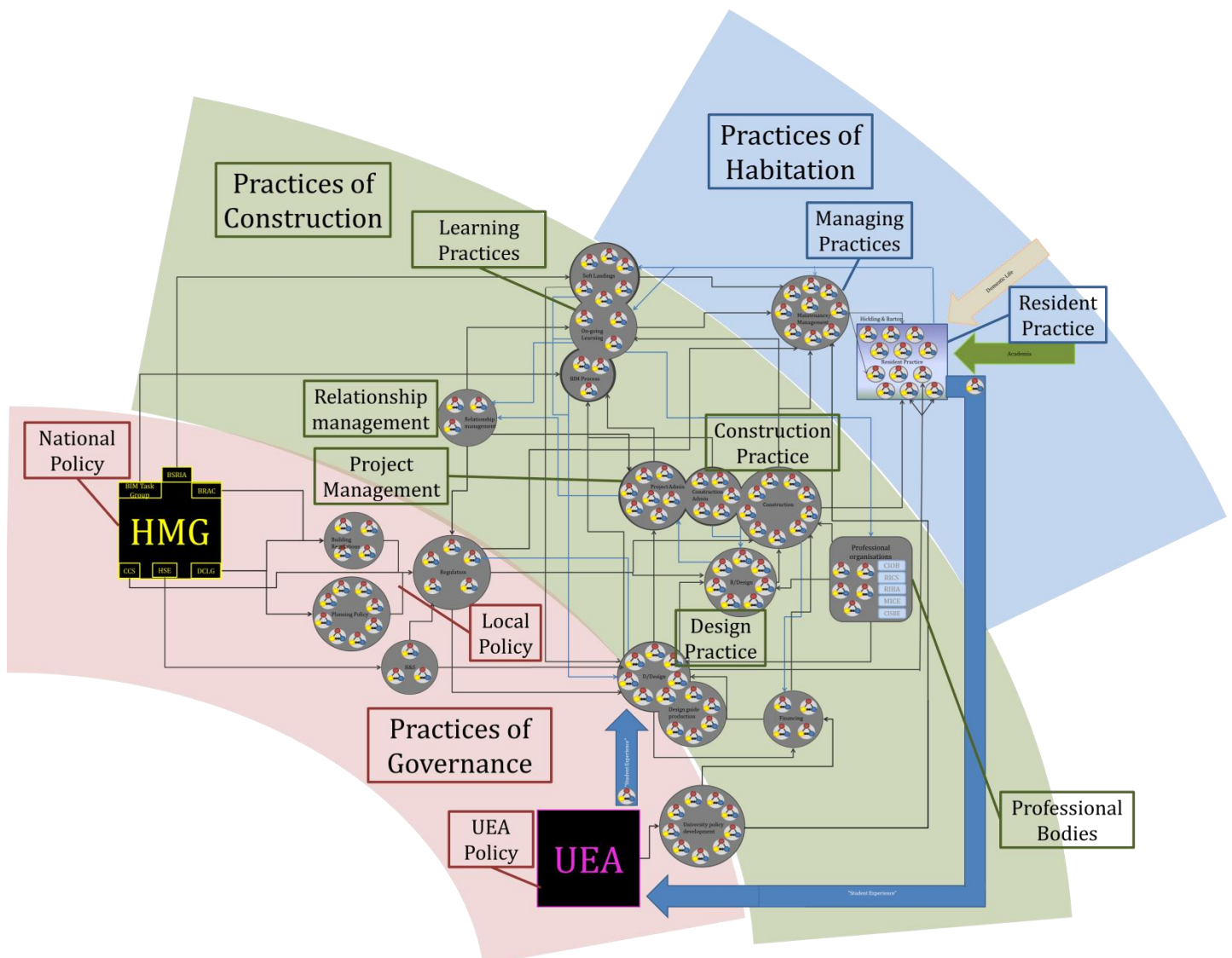


Figure 4.5 Full Blackdale system map highlighting three bands of projects comprising the Blackdale system and the interactions between them.

This chapter intended to answer the question:

“How can systems of practice be mapped out?”

Having established how to map the system in Chapter three, Chapter four has been an exploration of how to navigate that map. The system map broadly defines three different types of practices contained within the system: the Practices of Governance use policy to lay down a legally regulated timespace, within which the Practices of Construction create a physical location which is then occupied by the Practices of Habitation. The Practices of Habitation in turn provide feedback into both Practices of

Construction and Practices of Governance, which influence the next system going forwards.

The Practices of Governance set policy that affects this system of practice while at the same time governing many others. The national-level Practices of Governance had within them the capacity for reflexivity but any feedback is also diffuse enough to not really register within this system because of the Practices of Governance's strategic nature. More spatially local policy practices provided more opportunities for feedback, particularly those taking place in pre-construction interactions with planners as well as within UEA, with the Student Experience dominating UEA policy and project management.

The Practices of Construction are often those that directly govern the practices of the system and particularly those of the Practices of Habitation, but often without an explicit intention to do so. For example, in the case of construction practice, governance of the Practices of Habitation extends no further than setting a context in which they exist. In the case of some managing Practices of Habitation, effort was taken to extract data from those of residents as part of ongoing learning which can then inform construction practice in the future through entities such as the Design Guide. The focus on learning in this system is clearly not unique; since at least the two formal projects were government mandated initiatives. However it is demonstrative of the utility of this particular mapping method that reflexive practice shows strongly within this system in a way that it would not usually be visualised. It is one of the key factors in the success of the development which was hugely successful, at least by its own standards. The visualisation of reflexivity within this map allows recognition of the processes that drove that success beyond the simple understanding of actors driving the project to excel through their personal qualities.

The final grouping, the Practices of Habitation, demonstrate the incongruous relationship that the Blackdale development has with its creation. So much of the system is geared towards creating, or at least facilitating, the Student Experience and yet it interacts with the actual practices involved with the lives of residents very little. This seems strange with a system so focused on learning in order to achieve better

outcomes, until one remembers that the ideal outcome of that learning is to produce excellent, efficient buildings and fill them with residents without overtly interfering with practices beyond this. This relationship is made all the more incongruous by the other group occupying the Practices of Habitation timespace, the management practices. Because so many of them are based on monitoring and disseminating data they are perhaps more strongly linked to the wider system, but despite having clear links to resident practice they maintain a certain distance even then. They are often tasked with enabling or enforcing limits on resident's practice but the range of circumstances for direct interaction between practitioners is extremely limited. It is still however an important contribution to this thesis to acknowledge that both groups of Practices of Habitation, in a practice ontology, equally occupy the finished buildings.

It is clear that practices within the system interacted with, and by extension had some governing influence over, many other practices but that there is a great deal of variation in the intentionality of that governance. Some interventions act very much more on practice as entities, particularly the more spatially-removed Practices of Governance. Many projects within the system act as conduits for other governance and this is particularly the case for those in the Practices of Construction band, many of which are operating on rules set out by practices performed previously. While also, to an extent, governing in their own right, Practices of Construction are very much engaged in physically instantiating policy practices.

A number of projects within the system are effectively intrusions into this system by other systems of practice entirely and are only represented as they are because the map is two dimensional. Instead they should perhaps occupy another dimension, operating at a tangent to the Blackdale system, interacting with the Blackdale system only in so much as to fulfil whatever their own teleologies may dictate. Examples of this are practices of professional bodies or construction and contract administration. Alongside those are influences from students' homes and academic lives, which influence practices of residents while not significantly interacting with the rest of the system at all. Each of these raise further questions about how, beyond practices and projects, full systems of practice might interact with each other within a constellation of systems.

Practices are performed in service of a wide variety of goals, with most conforming to operational efficiency and profit making, the creation and shaping of spaces (be they physical or otherwise), and gathering or disseminating information. This discussion sets the stage for a more detailed interrogation of particular examples of governance within this system of practice in Chapter five. Moving on from how the system as a whole performs and how broad groupings of practice influence each other Chapter five samples a series of moments of governance within the Blackdale system and analyses the practice relations that inform and influence those moments. In doing so it adds a temporal dimension to a currently two dimensional map by tracing the key governing actions of the system through from inception to occupation.

Chapter 5: Sites of Governance

Chapter four laid out, in broad terms what the Blackdale system of practice of comprised of and how those elements govern one another. This chapter presents a more detailed interrogation of specific instances of governance that took place within the system in the attempt the answer the second research question:

“What are the relationships between practice and governance within this system?”

To answer the question the chapter takes three moments of governance from three different parts of the map, each taking place at a different time and, forming key aspects of the Governance, Construction and Habitation bands. Between the three, they tell some of the story of Blackdale and how it was governed. Each case is explored through a vignette followed by an explanation of the practice taking place, and then a discussion of the practice relations affecting it.

The first case is an example of a more traditionally understood practice of governance. It is the executive board meeting which provided the initial impetus for the development, and by extension the system of practice. This performance of practice is situated within the wider system of practice around the University in order to assess the governing influences both acting upon it and emanating from its performance.

The second case takes account of the performance of the practice of design, both in terms of the creation of design documents and the performance of the design process for the Blackdale development. It describes the ways in which specific practices interact and are bound together into a project as well as interrogating some of the governing relationships within and between projects.

The Final case addresses the interactions between practices inhabiting the finished Blackdale buildings, specifically cooking, in order to discover to what extent internal and external factors affect residents' practice. Following on from that point is a

discussion of the relationship between the student experience as performed in situ and the Experience as it manifests within university policy.

The chapter aims to highlight the advantages of a practice-based approach to explain the governing relationships within the system. It does so by bringing focus to contextual and constructed aspects of governance that might be missed by more traditional framing. It also highlights that not all of these relationships are the same and that practices govern in very different ways. Each of these cases is an example of a practice or group of practices governing others but each does so in a different way and through very different means.

5.1 Cases in context of the Blackdale System of Practice

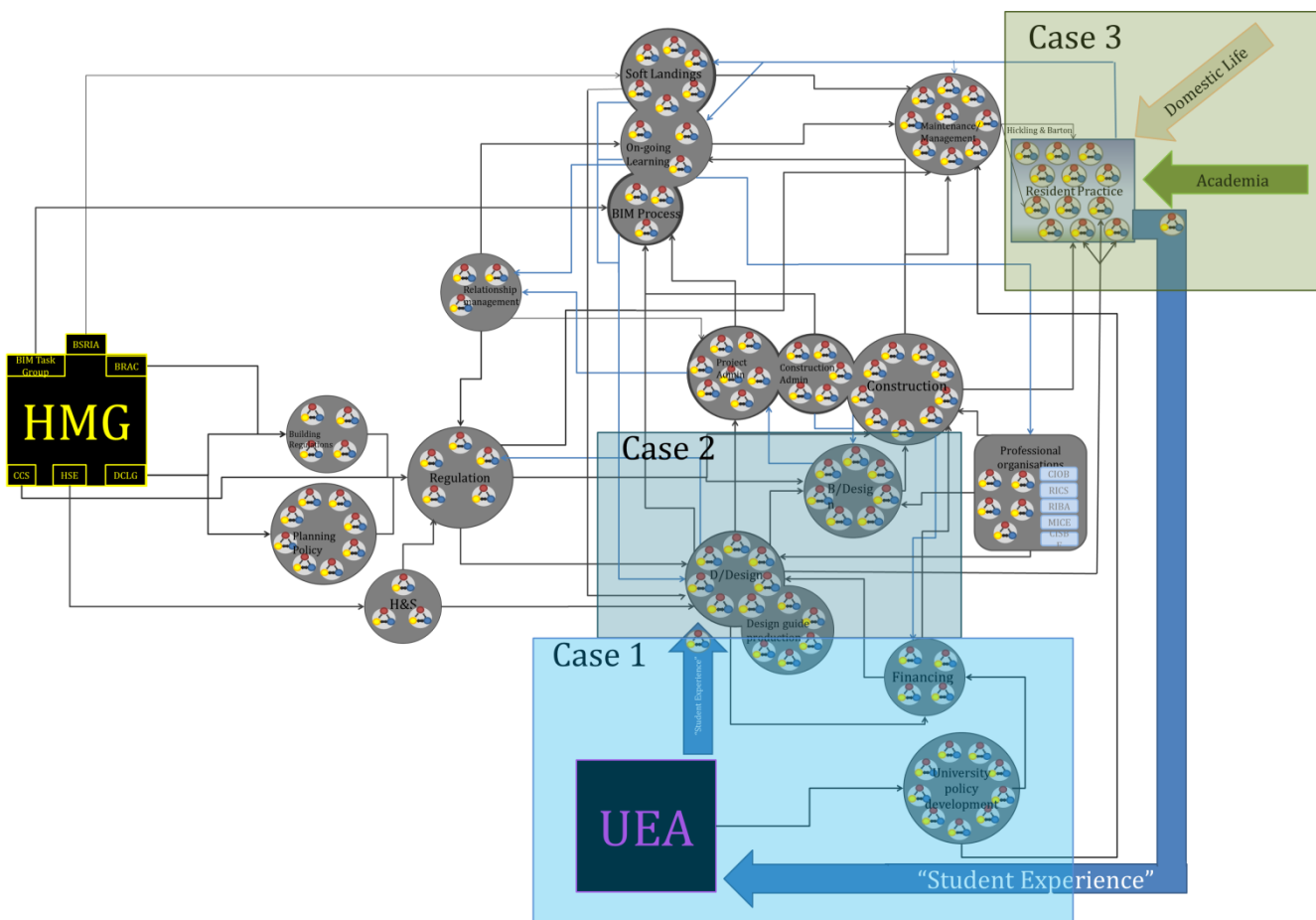


Figure 5.1 Full system map highlighting three bands of projects involved in the Blackdale system and the interactions between them.

The three cases that make up this chapter were sampled from the Blackdale system as representative of different aspects of how the practices within the system govern at different points. Additionally, between them they create a meta-narrative that begins at the nominal inception of the system, as much as single moment could be so, and leads through construction to occupation. At this point it is briefly discussed how the final outcome of the system also influences the development of subsequent systems of practice.

All three cases exemplify specific instances of governance within the system. The first case takes what would otherwise be a very ordinary aspect of governing, decision-making, and reframes it through an SPT lens to highlight the way in which such a practice interacts with others and, in doing so, governs. The second case brings focus to a critical part of the system, the creation of the building design. This not only highlights the way in which different practices must be bound together to achieve certain goals, but that sub-groupings can develop within the resultant projects. Each governs others towards that goal, meaning that not only is the practice of design a collaboration between many practitioners; its governance is as well. The third case addresses the impacts of the governing and design practices on the everyday practices of residents, situating them within the wider system. It finds that, in addition to governing influences from previous parts of the system, everyday practice is influenced to an equal or greater extent by many external factors such as previous home life and experience or conflicts with academic timetables.

Chapter four highlights the existence of many different practices of governance that are involved in the Blackdale system, such as legal and regulatory frameworks and the ongoing development of professional fields. These cannot all be addressed in one chapter but all have their impacts on the various cases none the less. University decision-making practices are impacted by the practices of government around the funding of university (Royston 2016) moving towards an increasingly neo-liberal model (McCowan 2012). This in turn drives the University of East Anglia's vision and understanding of what it aims to be into the future, towards an increasingly revenue-based model.

Design as a practice is strongly affected by industry standards and changes to them through professional development and accreditation programmes run internally by professional organisations. In addition, anything produced through the design process is run through a filter of planning law, regulations, contractual relationships, professional standards, health and safety and procurement laws. This is obviously a huge gamut of practice to address but since any impacts are taken as a foundation for any work done, i.e. ensuring that it conforms to current legal standards, they need only be noted as such before moving on to the interactions between practices within design.

Cooking is subject to so much external interference that the governing practices that make up the subject of the previous cases almost get lost and cannot really be seen to govern in any particular way beyond the initial creation of the physical location. It is defined by timespaces shared with other aspects of student life, previous experience, previously learned or recently acquired skills, the material arrangements of a student's lifestyle, and social interrelations with other students in the flats. Although the Blackdale kitchens are deliberately larger than normal and there is technology in place to limit power usage while cooking, these external factors combine to render these interventions less important than the designers would perhaps prefer. Given the chaotic nature of residents practice, from a governing perspective it may not be possible or even desirable to trace the impacts of interventions from outside systems, such as home life (Rip 2006). This worthy of note because that information would surely be vital in understanding what was being governed and ignoring it seems like an abdication, however sound the rationale for not doing so might be.

If the system could be imagined as a three-dimensional timespace, each of these cases represents a different way to slice through it (Watson 2012) to understand its mechanics. These are three different moments of governance, sliced three different ways to find different views of them. Each one could be framed as a series of decision-making practices; as part of a project containing many practices; or as part of the ongoing business of everyday life, and each time something different could be gleaned from the analysis. These cases and framings have been chosen because they tell the

story of the whole development in microcosm and they situate the governing aspects of it within the whole.

5.1.1 Practices of Governance

In order to answer the question of the relationships between practice and governance it is worth briefly re-affirming what is meant by these terms as well as introducing a few others. A Practice of Governance is defined as a practice that carries the intention to govern within it. This intentionality distinguishes the Practices of Governance from governing practices, which are recognised by their influence on other practices, without necessarily having the intention to influence.

Governing is often framed in terms of decision-making. Decisions are of course made as part of practices but they are shaped by the system of practice that exists around them. Some practices can be classed as decision-making practices but they are more often concerned with meeting and the combining of knowledges into a vision. It is important to note that while rational decision-making is itself a practice it is not constantly being performed at all points of a system in the way that a decisionistic model might take for granted.

The design case focuses very much on the project of design. This is the combination of many professional practices, regulation and consultation. In performance, these are bound together by management practices in order to create both a cohesive vision of the final outcome and the material artefacts of the design. That vision is held both in the form of design drawings and a digital environment, both of which are collated by specific parties within the system who then present the federated images to those carrying the Practices of Governance and Construction according to need.

In addition to Practices of Governance, this chapter makes occasional mention of Practices of Construction and Practices of Habitation. These refer to the other two bands featured on the final practice system map (Figure 4.5). Practices of Construction generally refer to practices involved directly in the construction process, but do technically encompass much of the support structures around the construction process as well as some that took place concurrently (4.2). Where the Practices of Habitation are

mentioned within this chapter it is generally in relation to residents' practice and operational management processes are noted as such if and when they appear.

The term 'timespace' is used frequently to describe the effects of governing practices. It has been taken from Schatzki (2009) as a means of describing the spatio-temporal contexts in which practices aggregate and are performed and in particular in this chapter is used to make a distinction between that and notions of physical spaces. For example, Practices of Construction produce a physical space in which the Practices of Habitation take place; however, in much the same way, legislative or regulatory Practices of Governance produce a more abstract but still very real timespace in which the Practices of Construction are performed. In these cases, the original Project Board meeting sets the parameters for a space in which the design process begins to create a second timespace, which is then inhabited by the Practices of Construction in creating the physical space that is then occupied by residents' practice.

5.2 Decision-making practice

This case is an example of decision-making practice; specifically, that of the UEA Project Board deciding to begin a new construction. A traditional governance approach would have this being the critical moment within this system as it represents the genesis of the system of practice around Blackdale. Social practice theory, and more particularly the systems of practice approach being employed here, suggests that while this is clearly an important moment and a relevant practice it is only a nexus point in the system through which governing forces that already existed, are expressed.

The case consists of a brief vignette and a following analysis of both the practice of meeting itself and the connections between it and the wider system. It reveals the elements of this particular performance of a Practice of Governance as well as the influences from UEA policy development, sustainability and the evolving Student Experience, which make up the context in which the decision to begin construction is made. While the performance of the practice featured here is clearly that of practitioners making a joint decision and intending to govern, the more systemic approach taken highlights the importance of the timespace context in which this

performance took place. This is not simply a decision but a confluence of circumstances that shaped a discussion and subsequent act of governance, and it can only be seen simply as a decision if that context is left unaccounted for. The purpose here is not to fall back into determinism and state that because the context precedes any decision and itself shapes what comes after, the decision is meaningless; instead, the purpose is to interrogate the Practices of Governance as a practice as well as situating it into a wider system of practices.

What follows is a semi-fictionalised reconstruction of the conversation that took place during the Project Board meeting to decide the initiation of Blackdale, including the various contributing forcings taken into account. This account was derived from data collected during fieldwork from various practitioners who had in one way or another interacted with this moment. That interaction included, being personally present, dealing with the resultant brief, or reflecting on the themes of this discussion. It is described as semi-fictionalised because it is derived from second-hand accounts and the reactions of the Blackdale system to it. The actual meeting, or, more likely, meetings in which the themes displayed below were developed took place sometime before fieldwork began and access was not granted for minutes. It is however evident from the data gathered later that this discussion did, in one form or another, take place and as such is described below as part of a discreet vignette.

5.2.1 Project Board meeting

In the Council Chamber of the University of East Anglia, the Estates and Facilities Division Project Board is meeting to discuss the creation of new student housing on campus. The University is in the midst of a drive to recruit roughly one thousand more students in order to raise additional funds to allow significant refurbishment of the University's aging infrastructure. The new accommodation will make it both fit for purpose and more able to cater to a growing student body, in accordance with the University's business plan.

Present at the meeting:

- Registrar, reporting to the Vice-Chancellor (VC)
- Deputy Dean of Students (DoS)
- Director of Finance (DoF)
- Director of Estates (DoE)
- Assistant Director of Estates (ADoE)
- Secretary, in this case a senior project manager who later became the Blackdale Project Administrator (Sec)

VC: We're meeting today to decide on what to do with the land around the Blackdale school site and to give the final go-ahead on the plans to develop that area.

DoS: As you all know, we're taking on nearly 1,000 extra students over the coming years and so we must make all the use we can of the space we have to house those we can on the campus.

DoE: That's going to put a huge additional strain on the management of the campus.

DoF: However it is nicely in line with the 2030 Vision¹, and allows us to make a little financial breathing space to help you with refurbishing the Lasdun Wall.

VC: Indeed, if we are to meet the needs of upkeep on our infrastructure we must continue to grow and expand the services provided by UEA.

ADoE: Of course, we must promote the Student Experience in line with updates to the campus infrastructure if we are to attract increased numbers of students.

DoS: Yes, the Student Experience is paramount! So new accommodation needs to be of the highest quality.

VC: Higher-end accommodation might be more attractive to international students as well. Their increased fees could really help with pay-back time on the project.

DoF: Agreed.

VC: As we're in agreement that an expansion of our housing stock is needed, what sort of development are we looking at?

Sec: Perhaps a nod to the sustainability of the new buildings? After all we've had such success with Crome Court².

¹The UEA 2030 Vision is the result of a campus-wide consultation on what the University should aim to achieve in the next decade and is a key artefact of the Policy Development project.

DoS: Yes, that's a good point. We've had great feedback from Crome.

DoE: Agreed, it's important we learn from our successes and carry best practice on into this new project.

DoF: Not to mention, if the efficiency gains from Crome can be carried through to Blackdale the potential savings from running costs are huge.

VC: UEA has a reputation for innovation in sustainability and I think we have an obligation to uphold that. We have a number of award-winning buildings, the new Enterprise Centre³, Elizabeth Fry⁴, and Crome Court; I think it would be good to build on that with this project.

ADoE: The scale of this project could be a problem there, we have relatively little control over what is going to happen in these buildings compared to the teaching buildings or labs and there is only so much we can do to make them sustainable.

Sec: We have the BIM⁵ computer model from Crome with all the data attached to it, not to mention all the post-occ⁶ data we've gathered since then. We can use that to inform what we're doing with Blackdale and make sure we keep costs low while maintaining the quality and efficiency of the build.

VC: Alright, so this new development should be as efficient and sustainable as we can make it, as well as being a higher quality build. What kind of accommodation best fits the expected Student Experience and how do we match that to our operational KPI⁷s?

²Crome Court was the most recent of UEA's new accommodation, built partly as an exemplar of sustainable housing and partly as a test-bed for the technologies and practices used for the much-larger Blackdale.

³ and ⁴The Enterprise Centre and Elizabeth Fry Building are both exemplar sustainability projects built on the UEA campus with facilities to house various meeting and teaching spaces. Both won great acclaim for their sustainability credentials at time of building.

⁵ Building Information Modelling is a system by which the design of a new build is produced digitally from inputs from the various designers. The federated model can be studied within a virtual environment and each component can be tagged with data regarding everything from price and colour to its suitability for recovery during decommissioning.

⁶Shorthand for post-occupation, which is the period after residents move in. Problems with the construction are identified and resolved during this time, and surveys are completed to gauge the level of resident satisfaction and engagement.

⁷Key Performance Indicators are a key metric by which professional success is measured.

Sec: Well the feedback we have had from students suggests that social spaces would be well received and I think that this should be a priority for the project.

DoS: We've discussed it a little already with potential architects and we were thinking of townhouse style builds to give a real sense of community, a full-sized kitchen, bedrooms upstairs and a communal area arranged around an outside courtyard area where students can socialise.

DoF: To cover the costs with a reasonable payback time there will need to be at least 500 rooms.

DoE: That will make townhouses difficult; the area we're working with isn't huge. Just in terms of square footage per room we'll need something a little more, intensive.

ADoE: More of a high-rise sort of affair then? Perhaps in the form of flats, grouped around a shared kitchen?

Sec: That would get us enough rooms but I do feel it's important that students have spaces where they can interact socially.

DoS: Agreed, it's more than just the experience of shared accommodation; socialising is a key aspect of the Student Experience we want to encourage.

DoF: While I'll agree that the Student Experience is served by social spaces, each one is going to cost us at least one room in terms of space we can charge for so we need to be pragmatic about how much space is going to be allocated for socialising together and how much for living in, remember they already have shared kitchens.

Sec: Not to mention that while students are socialising together, they're not all individually using lights and laptops in their rooms on their own.

DoE: So we can boost the Student Experience and encourage some more sustainable behaviour at the same time, excellent!

VC: Ok, I think we should do it, all in favour?

DoF: Aye

DoE: Aye

ADoE: Aye

DoS: Aye

Sec: Ayes have it.

DoE: Ok then, [Sec] will be the lead on this project, answering to [DoS]. Obviously, we'll expect regular reports on the progress you've made.

DoS: We'll come back with a project brief in short order and start getting a Design Team together; we already have a few ideas on who we'd like to work with.
Sec: And of course you can expect regular reports of progress as this all comes together.

5.2.2 The Project Board Meeting as a Practice

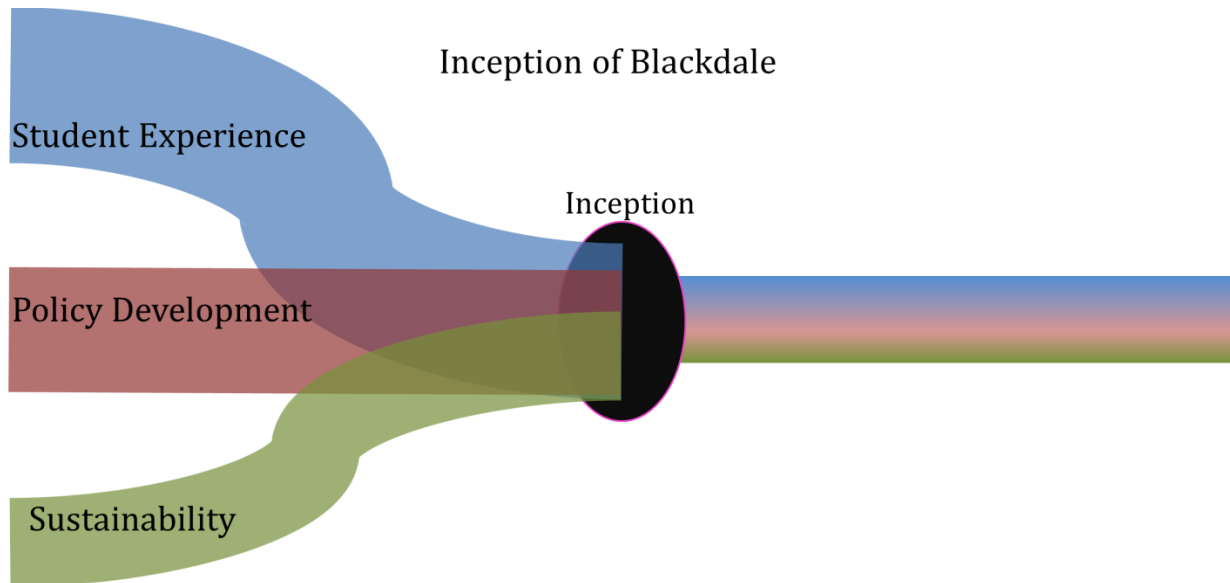


Figure 5.2 The beginnings of the Blackdale development, represented as a series of coalescing factors being collected and made into the impetus for the new buildings.

When talking about Practices of Governance it is important to acknowledge them as practices themselves. Despite the ubiquity and importance of meetings as practices, surprisingly little is written about them in terms of being practices; only the odd throw-away references here and there. What follows here is a more detailed exploration of the elements of this vital practice and its relationship to the Blackdale system of practice.

The practice here is decision-making, arranged as a meeting and specifically a board meeting. Each of these layers brings with it pertinent aspects and specificity to the practice. At its most basic level this is an example of a future vision being formulated and embarked upon by a number of practitioners, each of which is contributing some aspect of the vision and proposing future direction. This is described by Schatzki (2006) as the coordinated actions of colleagues, brought together in the meeting. Schatzki also notes that in its performance the meeting brings with it certain standardised roles and norms. One practitioner performs the role of a chair, ensuring that any pertinent source

of information is heard from and that contributions are made by all parties. The meeting is minuted and documented, a task allocated to a particular practitioner and ensuring continuity.

The whole event happens within a particular time limit. Being a board meeting, this particular meeting adds the factor that each of the practitioners present is a governor in their own right and of their own department or division. Different courses of action are evaluated by practitioners, as part of shared practice. This pooling of strategic knowledges and understandings adds new elements to this meeting in terms of scope and timeframe of the decisions being made. This is a gathering to produce or enact a strategic policy rather than, for example, a supervisory meeting or a monthly budget meeting, each of which would involve slightly different elements. Schatzki (2005) describes meetings as being an important part of the material arrangement of organisations, and indeed they are, but it is the description of the meeting as the “nexus of pasts and futures” (Schatzki 2006 p1872) that is of greatest interest here. The Project Board meeting could easily be ascribed a primary role in the governance of this system, and in terms of decision-making that would be accurate. In terms of practice however it is simply the expression of various pre-existing parts of the system of practice at UEA, which prefigure any decision being made towards a particular conclusion – in this case, the initiation of the Blackdale system.

Intentionality is a key part of the Practices of Governance: the desire to achieve a goal alongside a site and connection between practices (Schatzki 2015). In this case the intentionality is twofold. The first of those intentions is to bring strands of expertise and experience together to form a vision, and the second is to form that vision into an intervention to be applied to the as-yet unformed Blackdale system. Once present the binding of strategic understandings, aims and practices is the purview of Board members. UEA’s need to refurbish aging infrastructure demands increased revenue, which is driven by an enhanced Student Experience, which is itself driven by continuous refurbishment and new, higher specification accommodation. The higher specification of the residences, and refurbished infrastructure is also driven by sustainability concerns in terms of operational efficiency. Both of these involve decreased running

costs and lower emissions but require a higher initial capital investment, which requires increased revenues.

“[T]he carbon footprint [of the] building would be pretty much married to the cost of lifecycle choices. If I put more capital into the building at point zero, the likelihood [is] that I will get a better product. I’ll be able to buy things that last longer, haven’t got to be replaced so often, haven’t got to be maintained so often so have a lesser carbon footprint.”

Project Administrator 8:09

This practice of meeting is not so much defined by its elements as others might be but by the connections it draws (Schatzki 2011). In performance it is a relatively straightforward practice but the practices attached to it define it. In terms of artefacts this iteration of the practice of meeting is not dissimilar from many others. The UEA Council Chamber is a rather grandiose space but is still fundamentally a space where tables and chairs are placed in a roughly circular arrangement to facilitate communication between practitioners, and there is a projector for the presentation of visual information.

Documents, including an agenda, are circulated prior to the meeting to ensure that necessary knowledge is held by each practitioner and to configure the timing of specific tasks within the meeting timespace. Practitioners may bring devices or books or folders to record, as a memory aid, pertinent information and note any actions they might personally need to take but the attendant practice of minuting means these are not essential. Minuting could also be classed as a skill within the larger practice of meeting: that of distilling pertinent information from the meeting and disseminating it after the fact, thereby cementing knowledge transfer and actions to be taken into an accessible format for later reference.

There is often an element of negotiation within meetings (and certainly it is present in many of those noted in the next case), but in this example what takes place is more about configuring and arrangement of understandings rather than arguing for the prominence of one practice or element over another. Even with reference to

sustainability being a focus of the development there is relatively little friction due in part to the ambiguity of the meaning of sustainability (Walker & Shove 2007) across practitioners. As a result, each practitioner can understand the concept in a way that aligns with their own strategic goals such as reputational benefits, operational efficiency or lifetime costs. All the carriers of this particular performance of meeting are relatively level in terms of status and authority and as such the skill involved in producing a positive outcome is that of binding different aims into an intervention to then be prosecuted by others, rather than interventions being applied between practitioners present here. Images around this meeting are those of control, and shaping futures through policy. Specifically in this instance, there are meanings around combining strategic insight and expertise in order to craft a vision of the future.

It is this transitioning from past to future that is the vital contribution of this particular meeting. The prefiguring connections from the wider University system define the space in which any decision will be made concerning the construction of accommodation on campus. These are the precursors of any intervention, predetermining the path it is likely to take in line with the overall policy context.

5.2.3 Practice Connections with Project Board meeting

This section addresses the nature of the connections between the practice of meeting and those of the rest of the Blackdale system. The previous section noted that the Project Board meeting was a nexus between past and future practices. Those prefiguring relationships made the meeting itself more or less just a point of connection, predetermined by the needs that drove it, and the outcomes that had to come from it. The following analysis expands on the work of Schatzki (2015) and Macrorie (2016) with the aim of reaching a more definitive answer on the nature of practice relations. Specifically, there are four key relationships that exist between the Project Board meeting and the Blackdale system that affect its nature, its context and its effects.

The first key connection is between the meeting itself and the system of practice. This, simply put, is an enabling relation. This is both because the primary point of this meeting is to literally enable the creation of the Blackdale development and, by extension, the system of practice around it, but also taking the technical definition used

in Macrorie (2016 p275) of, "links between practices purposely created/encouraged to commence".

"I would be the recipient of a brief. I would then play that brief back to a group of people to ensure that I've understood it correctly. At that point other clever people add meat to that particular brief, designers etc. [...] we then play that back again to stakeholders and Project Boards until we're all agreed that the brief is now developed sufficiently to make into a reality."

Project Administrator 0:38

This quote is a description of exactly what Macrorie describes, in the context of Blackdale. The creation of that brief, whilst arguably the key decision of the whole system, is a powerful act, the effects of which reverberate to this day, but, as demonstrated by the rest of this section, it was also only a moment in an ongoing tableau.

The Project Board meeting exists as part of the policy development project of the Blackdale system. It is a standardised practice not just in the sense that meetings generally conform to a set of given elements, as noted in section 5.2.2, but also a specific meeting of the Project Board. It is therefore itself a nexus of various standardised elements. These include those around meetings generally as well as the specific practitioners involved, i.e. the Project Board members. Furthermore, the Board meeting is influenced by the evolving policy context in which it takes place. One aspect of that context is demonstrated below, referring to an increasingly corporate stance taken by the University as a whole.

"We can only feedback on what we're fed back on, if you know what I mean, and the University's moving towards more of a customer-focused drive. The students are our customers therefore we need to, meet their needs. "

Head of Sustainability 17:44

This increasingly consumer-based interaction is demonstrated within the Student Experience as it pertains to University policy. Taking concepts from both theoretical

sets of practice relations, the link between the Student Experience and the meeting is one of emergent intelligibility. Emergence refers to the linking of practices into complexes that both form new characteristics and that cannot be reduced to the individual practices (Shove et al. 2012 p87). This is particularly apt in this case. The Student Experience, as an aspect of policy, does not refer directly to any current practices of students. The Student Experience is student life as it is intelligible to the participants in this meeting. It refers to a set of perceived expectations of student life as understood by the University as an entity.

"We are looking at target achievement for things like the student experience [...] that's how we measure, broadly, what we do in terms of financial targets and quality of service"

Head of Accommodation 15:20

"The purpose? Yeah, it's part of the student experience really. You know, they're renting rooms, you know, for a period of time, some of them are quite expensive, and [they] expect a decent service."

Maintenance Team Coordinator for Accommodation 12:27

The Student Experience is how the University and thus its decision-making practices understand what a student is and what a student might want. It is dynamic as a concept and much of the University's actions are enacted with it in mind. Specifically, it affects this decision because it is understood that students expect higher specification buildings. It is important to note that this may not be an accurate assessment, or at least that it is unlikely to be applicable to the entire student body, as suggested below:

"Some students don't want an en suite in every single room. Some students are happy sharing kitchens and paying less, but they don't seem to listen to that."

Students Union Welfare, Community and Diversity Officer 4:23

All of these relations represent driving forces within the Project Board meeting but none more so than the relationship between the practice and the ongoing socio-technical context of the built UEA campus. The campus has, in effect, a life of its own, or

more specifically, a lifespan. Much of its infrastructure was built in the 1960s and is now reaching the end of its intended operational lifespan. In practical terms this means two things: the main campus structures are so inefficient that just keeping them operating is a massive drain on the University and additionally, that there is a need for a drastic re-fit in the near future which must also be paid for. These are simply functions of concrete infrastructure and time, and would be happening regardless of any other factors. As a result, they effectively form a bottom line because the existence of the University as a functional system is predicated on them.

"Yes there's less emphasis on the environment at the moment because we need to find a lot of money to refurbish the Teaching Wall, but if there's no University because it's gone bankrupt, there is no University"

Head of Energy and Utilities 39:40

Schatzki (2011 p10) describes this relationship as prefiguration, "the difference that the present makes to the nascent future". The material arrangement of the University, to say nothing of the practices it plays host to, prefigure the outcome of this meeting by factoring in the need to generate revenue not just from a business point of view but an operational one in terms of the need for refurbishment. The decision being made here is an example of a Practice of Governance that is itself being governed by other factors. From this single timespace it can determine to an extent the cascade of practices that follow to form the Blackdale system, but it does not create those factors and could not hope to stop them being factors in the ongoing system of practice around the University. It is both a critical decision and the entirely consistent outcome of a dynamic system of practice in motion.

5.3 Design Practice

This case highlights the design process that took the Blackdale system from its inception with the Project Board meeting into its construction. This will demonstrate another aspect of Practices of Governance taking place within the Blackdale system of practice. While the previous case is a single moment of governance, this example is a process of

multiple consciously-directed practices bound together and directed towards a particular goal.

Design is one of the most central and most influential projects within the Blackdale system. It creates the timespace for the Practices of Construction to take place within and by extension also does a lot to shape the timespace of Practices of Habitation. The project is engaged in creating a vision of the development before recruiting professional practices to instantiate that vision. At this time, this instantiation is the creation of artefacts in the form of design documents. Once the design is semi-completed, it is tendered to a contractor who will then take ownership of it and recruit practices in the form of sub-contractors to physically create the buildings from the design documents. During this process the contractor is has control and license to allow professional knowledges and practice of sub-contracted parties to inform the design in order to make it more practically and financially efficient. The design professionals are then reintroduced towards the end of the project to assess how closely the final product reflects their specifications as well as a few that were consulted during the process to keep close to the client specifications.

The governance being displayed in this case is the constant, cumulative (Maller & Strengers 2014) process of communication and risk assessment being carried by the project management and later contract management practitioners during the development. Each of those projects not only binds the practices they were directly responsible for together but also keeps the two aspects of design congruent through mutual understanding of the work being done.

The following vignette takes the form of a diary tracing one such strand of practice, that of the senior architect, from its initial recruitment to handover to the contractor and value engineering process. The dataset being used includes Design Team meeting minutes and references taken from interviews with the practitioners involved. They are formatted into a diary to allow some license to communicate some of the viewpoints expressed in interviews and thereby more seamlessly connect the two data sources. It details the interaction of professional architectural practice with others and the

connections formed between each one while all were being managed by project management and subsequently by contract management.

5.3.1 Diary of a Designer

5/3/14 Pre-App LSI⁸:

One of our senior partners is bringing me in on a new project at the UEA! It's early days yet but he's already met with the client and planners, always good to get talking as early as possible, make sure everyone's on the same page, and stays there...

It's going to be some new halls of residence, high-end, high-spec, BREEAM⁹: Excellent, very environmentally friendly, a perfect job for LSI really. We'll be building on the work we did for Crome Court, using some of the same modelling software. I do hope the students like them, even if UEA wants to keep "Controls over the design to match the Architectural vernacular of UEA". So, more Brutalist grey blocks then, we really must try to inject some colour in somewhere, maybe gold... I think the client agrees.

Still, always exciting to have a new project to work on, I wonder what they're going to do about all the trees...

27/8/14 Pre-App¹⁰ Bidwells¹¹:

So today we had a tour, and we talked about trees...

It was us, the landscape people, the two guys from the Council and the client, talking about the environmental impact of a new building on the site. It's funny, but so much of the layout gets decided by where the old trees are. Looks like we're going to have to

⁸LSI is the architectural practice hired to work on Blackdale.

⁹The Building Research Establishment Environmental Assessment Method. BREEAM is a standard by which new builds are judged towards sustainability, with the highest rating 'Outstanding'.

¹⁰The Pre-Application period is before planning permission is officially sought, giving time for managers to negotiate with planners and arrange their application so that it can be expedited efficiently when needed.

¹¹Bidwells are a planning consultancy firm who handled the Pre-App for Blackdale on behalf of UEA.

build these houses round them.

Next meeting's in a month, we'll have the layouts by then. Apparently UEA are very keen on encouraging students to socialise so we'll have all sorts of places for them; living rooms, social spaces, outdoor meeting areas and maybe a central café for them all to sit in. It all sounds very pleasant, I'm quite looking forward to it.

25/9/14 Pre-App Bidwells:

Hit a bit of a snag, word's come in from on high about just how many rooms they're planning to cram onto this site. This could take some thinking about, not sure townhouses are going to cut it. If we're looking at big housing blocks they're going to impact everything. The planners are worried about the footprint and height of this kind of construction. It's going to overlook the school next door, not to mention the houses on the street, the residents will be up in arms! They're already pissed off about the new cycle paths.

Long story short, everything's on hold until we can re-draw the layouts and work out where everything's going to go. We'll be going to talk to the Academy and residents as soon as possible so they can sign-off with the planners. We might need to think hard about how tall these blocks will be, but then how are we going to fit in 500+ rooms?

3/10/14 Pre-App Bidwells:

Huzzah! Planning permission incoming!

Having spoken to the planners, they're happier with the footprint of the layout and we've shaved some of the height off the flats overlooking the road. There's still a bit of fine-tuning to get done but we'll get that sorted out with the Design Team.

I'm really liking the new layout: the two blocks, taking their inspiration from the Lasdun¹² wall on the main campus, with a canyon on the middle creating a private space

¹²The Lasdun Wall is the main structure on the UEA campus. Internationally famous for its Brutalist aesthetic and Listed, it has become a problem in recent years due to having outlived its expected lifecycle and begun to degrade. In addition it is extremely inefficient to run and creates a large drain on the University's resources. It needs to be refurbished to assure financial solvency.

away from the world. It's really quite elegant. This is my favourite stage, when it's just us and the clients, creating a vision for a new space. I dread to think what a mess the engineers are going to make of it, but that's the job.

18/11/14 DTM¹³ LSI:

The Blackdale Design Team met today. So now we've got quality surveyors, structural guys, MEP¹⁴ people, BREEAM and the client's management consultant all adding bits to my design. I'm glad we've got a team from LSI here as well, helps to keep a handle on things. Looks like these blocks are going to be really green, BREEAM tracker's already set out and they're talking about Passivhaus standards too! It's exciting, but it'll need another re-design for those kind of specs. Good thing we've got all the BIM data from Crome Court to work with.

We haven't actually got planning permission yet and now the QA's¹⁵ talking about tenders. This game's always a bit of a juggling act. I guess it's up to the project management guys to coordinate everything, they'll let us know ahead of time if there's a problem. Looks like they're costing in someone to do Soft Landings too, anything to make sure everyone plays nicely.

25/11/14 DTM LSI:

The design's starting to come together now. We designed the look and the layout, the structural engineers are double checking to make sure it'll all stand up, and once they're done the MEP team can get in and make sure that these aren't just boxes but that we can fit all the plumbing and power in. We're learning from last time; the risers in Crome were far too small for anyone to actually maintain the building. We have to do better this time. Not just space for wires and pipes but enough for a human to get in and fix it.

¹³Shorthand for Design Team Meeting

¹⁴Shorthand for Mechanical, Electrical and Plumbing, sometimes also referred to as M&E. It refers to the mechanical workings of a structure and the practices required to install them.

¹⁵Shorthand for Quantity Surveyor, those responsible for costing the development initially and at every stage throughout its production.

We've all been asked to put in requests specific to our disciplines that the client team can judge the tenders by when they arrive. After that it'll be a case of checking up on the subbies¹⁶, making sure they're doing what we said they would. They're always going to try to cut corners, sometimes they know better, sometimes they just think they do, sometimes they want you to think they do. Nature of the D&Beast¹⁷ I guess.

2/12/14 DTM LSI:

Now we're nearly out to tender. We're just hashing out the 'non-negotiables' with the client so they know what they have to dig their heels in about to get what they want out of the project. They know most of it already, they asked for it after all, but it never hurts to talk to a professional. The QA's putting together a matrix of costs, buildability and the look and feel of the place, just so we've got a point of reference.

It's not just the specs either, everyone knows everyone around Norfolk, so we know who to trust to get 'good' rather than, just 'inexpensive'. Not really sure why we need a contractor consultant really, we know who we'd like to work with, but it'll all come down to who gets the tender... So fingers crossed.

I've got a meeting with Building Control this afternoon, just to get them to sign off the current designs, make sure everything's ok with Building Regs and we haven't missed anything. I really hope not, the Project Manager's drawing up the whole programme and the landscaping guys are all set for this build and phase two. Would really be a shame if we've fallen foul of a regulation somewhere.

23/06/15 VE¹⁸ Blackdale:

So the tender went to R.G. Carter¹⁹. It makes a lot of sense, they're a local company, committed to doing right by local clients, and staying cosy with UEA. We've worked with

¹⁶Shorthand for 'sub-contractor'

¹⁷Referring to the Design and Build contract that has become industry standard. The client creates a basic design and puts it out to tender at which point, once an agreement is reached with a contractor the ownership of the design passes to them for the duration of construction.

¹⁸Value Engineering, is the process through which the details of construction are agreed formally between client and contractor. Aspects of the development are divided into essential and non-essential before a negotiation for their inclusion takes place.

them before, there's a good working relationship there, we understand each other. Not that that makes the next bit any easier. Value Engineering time...

Today we're meeting with the contractor team and a couple of reps from the main MEP subbie, Briggs & Forester. D&B is a strange system, everyone has to lie in the tender to get the job, then we have to haggle and to decide what we 'really' want while they try to cut down their costs for construction to actually fit inside the budget they bid on.

Briggs seem to want to fiddle with every little thing! They're questioning the ventilation, re-jigging all the lights and monitors to peak efficiency. They're MEP, so they've literally got fingers in everything, but still they're being very awkward. Where they're being picky, Carters are making the big changes to the design. They've ruled out the grey-water system already, but the payback time on that was longer than the lifespan of the buildings, so that was always going to be a loser. They're talking about getting rid of the Button in the kitchens, but we're telling them it's a safety thing and it's got to stay, they don't need to know it's about energy savings. UEA is trying to standardise the whole campus, so the kitchen kit will have to stay as per the brief. Looks like they're going to win on the colour panels though, yellow instead of gold. Personally, I think the whole look of the façade loses something if we change that, but I'm only one voice, and at least there's still some colour in the grey.

When I said Norfolk was a tiny place, it's true, we've been hired as the contractor side architects as well. I'm still with the client, but I suspect I'll be peeking over that Chinese Wall²⁰ from time to time...

¹⁹The primary contractor on this development, responsible for recruiting sub-contractors and completing the development on time and on budget.

²⁰ The 'Chinese Wall' is a theoretical barrier between members of the same firm, in this case architects at LSI engaged by the client and contractor respectively. Theoretically there should be no communication between these different practitioners and they should only engage with each other through their respective employers. Inevitably, since they often share a desk, there will be some level of communication, which is generally allowed as it will often smooth the overall design process.

5.3.2 The Practice of Design

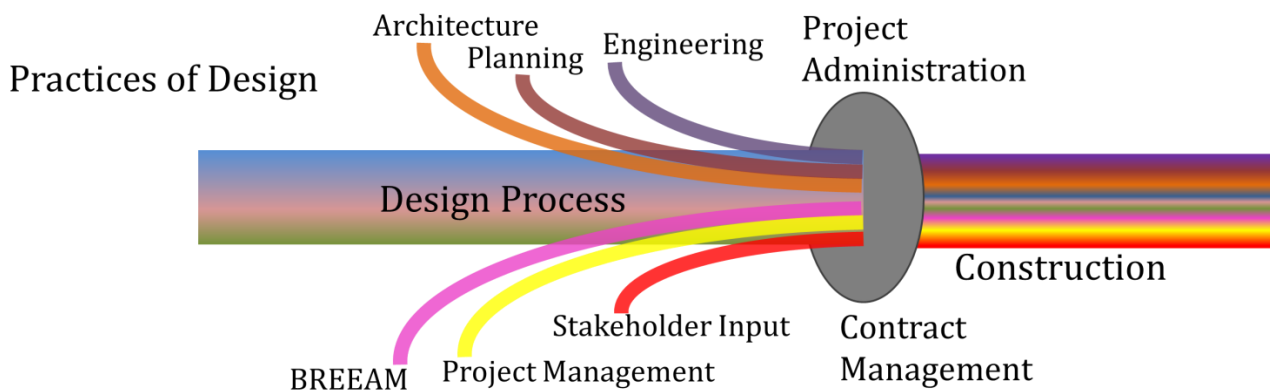


Figure 5.3 The design process represented as taking an initial brief, generated by UEA policy and recruiting professional practices to realise the design. Once recruited by project administration the practices involved are bound into a final artefact which then drives construction.

In the case of this diary, 'design' can be two things. Firstly, it is the creation of the artefact of the building design during the part of the design project that the senior architect is responsible for. Secondly, it is an account of the creation of the design for Blackdale in a more abstract sense – that of creating the designed vision of the Practices of Construction to then occupy.

Design in this case is manifested in a series of physical, or at least digital, artefacts of design, such as maps, layouts, drawings, and 3D models. These are created and held as artefacts of practice spread across several disparate, and indeed separate practitioners. They are then coordinated and collated by a small group of practitioners whose carried practice is at least in part to unify those artefacts into a single vision and disseminate it among the practices required to instantiate that vision. Design practice is a collaborative, coordinated and, as Spurling and McMeekin (2014) put it, cumulative act that creates the vision which is then given physicality by the Construction Project. The design process that an architect goes through is the same process in microcosm, with a much tighter range of practitioners, visions, aims and governors producing a rather more singular artefact than that created by the Practices of Governance and Practices of Construction but which itself provides a foundational vision to inform them both.

The potential of design to influence practice is well established (Shove 2007), along with the potential for it to, in turn, be influenced by practice. An example in this case would perhaps be the Student Experience taken from previous Practices of Habitation, which is then integrated into an understanding of what the new building is for. In the creation of the initial design artefact the architect is aware of both this process and its influence and is attempting to form a design vision that is informed by both the local system of practices and a much wider global system of architectural and sustainability knowledges (Faulconbridge 2010), the elements of which then inform best practice locally. In creating this vision and implanting it within the design project, the architect plays a key role in bringing these global elements of best practice into the development through communication between practices bound within the project (Faulconbridge 2013).

The design process here is a good example of a constituted complex of practices and is easily understood as such because each practitioner in this case can be defined by the practice they carry. Shove et al. (2012) describe how practices come together in time and space to form bundles, which can then shift and change over time, but this process is much more deliberate. There is an intentionality within this bundle that leads more to it being defined as a project (Watson & Shove 2008, Røpke & Christensen 2012) with a specified end-goal, to which each of the practitioners is being expected to contribute. The binding and guidance of the project is achieved in a very obvious way through the practice of project and contract management, with the literal recruiting of practitioners to add their practices, but is in a more subtle way informed by the initial design. Created from client specifications, the architectural design vision for the building then creates the timespace for that recruitment. That timespace is curated to include particular skills and materials needed as well as forming the attendant practices around that core of meaning.

This binding of practice is particularly important when thinking of professional practices which each contribute differently to design. An architect sees potentials and aesthetics, a structural engineer sees angles and mass and sheering forces, while a services engineer sees needs, such as water, mobility or light. Each, if somehow allowed to operate alone, would produce a final product prejudiced according to their chosen

discipline (Shove et al. 2015). The design process is by necessity therefore one of integrated knowledge production as described by Smith (2006), with each practice adding to the whole and with a certain amount of reflexive practice in place to ensure cohesion between those visions.

Once the design project has been created around the initial design and each practice has added their own aspects to a federated design representing their combined input, another level of required cooperation is added through the D&B contract. In speaking of 'Machiavellian Megaprojects', Flyvbjerg (2005) outlines the issues with the enforced competition and misrepresentation inherent in this type of organisational structure. Once it can be assumed that both sides have accepted what is known to be an underestimated final cost, and thus an overestimated guarantee of product quality, it is incumbent on both the client and contractor to maintain communication between themselves. By extension, both the client and contractor also maintains communication between the various aspects of the Practices of Construction each represents, to ensure that the design manifests as the closest thing to the desired outcome for both parties.

What is described here is design as a created governing artefact, as an act of governance, and as a governed process. It is governed by the client's specifications, drawn in this case from the Project Board meeting. It creates the artefact of an initial design, which goes on to govern the practices that recruit practices into the design project as well as internally governing what those practices contribute. Design is then governed in balance between two sets of managing practices towards the Project outcome, which then creates the timespace for the following Practices of Habitation.

5.3.3 Constituting the Design Project

The design project is more constituted through connections in practice than the other two examples in this chapter. It is comprised of several different kinds of relationships between practices, both relatively 'close at hand' such as those of project administration but also by the much more distributed practices of government and of professional bodies. These connections span the social, the technical and the legal in terms of the means by which they influence others as well as design practice itself having a huge

influence on the practices of habitation. This is discussed in the following vignette (5.4.1).

The first important connection is that of the project administration practices and the practices carried by design professionals. This constituting practice relation forms the design project, which then produces the artefact of the design. The governors in this case recruit practices into the design project, which are then contingent on each other to function as a single bound unit. Once these professional practices have been recruited and combined, the task of project administration becomes oversight, risk assessment and dissemination of information to where it is needed. These form a reflexive cycle of governance coordinating the design to ensure that practices align in time in order to produce the design artefact. This binding process can be seen in the quote below:

“Working with [Project Architect] to develop the design. The concept design, outline design, and then produce the employer’s requirements for tender and then, stay client side to ensure the [B]Design, as it’s being developed further stays with, as, to the original design intent”

Senior Architect (Client) 1:36

“Ensuring the [D]Design is resolved, to allow us to procure. We have to procure a number of sub-contractor packages, making sure that they meet the employers requirements and make sure they sit within the budget [...] make sure they arrive on-site on time, make sure when they arrive on site they’ve got everything from a health and safety point of view, and attendance point of view, making sure preceding trades have completed their works making sure their works are completed to allow the following trades to complete their works.”

Contract Manager 2:21

The first refers to the recruitment of practice around a central design practice being carried by the architects involved. The second refers to the recruitment and coordination of practitioners in order to instantiate that design. A central core practice of design is surrounded and enriched by a diverse group of practices, which are

themselves encapsulated within a governing structure that coordinates and steers that process.

As already noted, this process is also informed by a series of standardising relationships that dictate some of the elements and scope of professional practice. An example of this is the relationship between Building Control and design practice. Building Control is essentially an entity that monitors design elements to ensure that they meet set governmental standards for safety or structural integrity to ensure that the finished building can be legally occupied and used for its intended purpose:

“We have building control and planning which are statutory requirements [...] that you need to discharge, for building control to then give you a certificate to use the premises for its intention and to the planners that you can occupy that building.”

Senior Design Manager (Contractor) 49:57

In practice terms this relationship ensures the “faithful reproduction of practices occurs according to a specific set of interconnections” [and the] “stability of the configuration of practices is enhanced” (Macrorie 2016 p257), making it a combination of standardisation and reinforcement. Building Control is explicitly enforcing standards, however the actual interaction between it and the professional practices is one of reinforcement. This is because all professional practices already have as the baseline the standards of their given industry. These elements are standardised by professional bodies and initial training in that they are accepted to be the minimum acceptable standard for any construction practice. Building Control effectively is simply checking for errors but in so doing is still reinforcing the basic elements of professional practice.

Once the DDesign is finalised by the client and client side designers, it is then put out to tender. A contractor is assigned following this and the now BDesign is in the custody of the contractor until handover. This split in design practice provides an example of another form of practice relation. Consultants are recruited at various points both before and after the design handover in order to, essentially, smooth relationships between various different parties. These include the planning consultant, the

management consultant and/or the contractor consultant. The practices carried by these practitioners facilitate the role of enabling cooperation between the practices involved. While the relationships that they facilitate would, by necessity, be happening anyway, the consultants' practice facilitates greater linkage between practices of governors and professionals in order to "capture greater time, space and resources" and thereby speed up the production of the development more generally (Macrorie 2016).

"Because the programme was quite tight, I think we just had to do the right things, or it just wouldn't have worked out, like with the planners. Realising how important it is from a programming point of view, just to eliminate risks for the project."

Senior Architect (Client) 15:46

"They'll ask for flood risk assessment and the like, and we'll do those studies. Usually they come through pre-planning and we know that they're going to ask for those type of things, so we can get the reports done. And then, so we have a conversation with them, "This is what we're proposing to do, what sort of things you might want a flood risk assessment on". [...] then some of the planning conditions will be, "Please provide a flood risk assessment", and we've already got one so we apply for discharge of the planning."

Project Manager 26:16

The consultant's practice is primarily involved in risk assessment and facilitating the tasks noted in the above quotes. This aids in being able to communicate the needs or demands of different parties to the design ahead of time and ensure that those needs are met before a request is actually made. This smooths the process and aids cooperation between practice that would likely be happening anyway. It also prevents the relations between practices becoming destructive, forming delays to the development.

The final key practice relation is simply one of cooperation. At its core, design is cooperation by those coordinating professional practice in order to avoid competition between the resultant projects. This competition would sap the overall amount of time

and resources available to each project and by extension the development. Not only is this cooperation between designers and managers, and between managers and regulators, but also between the contractor and client once the D&B handover has occurred, and each of their respective design projects. As demonstrated below, these design projects need to be coordinated not just between each other in order to avoid conflicts but internally to ensure that they work effectively together.

“Well, you need to have the right people about you, for starters. From the main contractor all the way through. Everything follows sequences... it works, but a lot of times it don't. But you do get over things. Just the way the team works here, everyone works together. In London it's a different story.”

Mechanical Site Manager (Sub-contractor) 12:24

With the D&B contract handover, the first set of connected design practices is effectively spliced into a second group recruited and managed by the contractor. This process does not make for a perfect union or clarity of direction, partly because the goals of both projects are slightly misaligned but also because the tendering process is based on pretences that both sides know to be a lie (Flyvbjerg 2005). However, because in this system such emphasis is given to reflexively maintaining a positive and cooperative relationship between the governors involved, the integrity and direction of the D&B Design projects are maintained until the joint goal of timely, on-budget completion is reached.

5.4 Cooking Practice

This final case looks at a specific practice taking place within the finished Blackdale residences: cooking. Cooking is considered in this instance to be an everyday practice within the Practices of Habitation. It is not considered to be a governing practice within this system and is here being addressed in terms of being an outcome of practices governing from different points in the Blackdale system. Being a significant part of the residents' practice, the performance of cooking practice does, to an extent, govern the arrangement of practices in terms of timespace allotment between Practices of Habitation. In addition, being understood as a significant part of the Practices of

Habitation, cooking becomes a correspondingly important part of the Student Experience – at least with reference to its effect on practices around the creation and shaping of residence timespace. In this way, the performance of everyday practices in situ within Blackdale governs the performance of future practices through the University’s vision of student life.

In terms of the outcomes of the Blackdale system and their effects on cooking, this case focuses on two specific points of connection. The first is a specific design decision to place ‘the Button’, which allows power to be fed to the cookers but cuts it off after thirty minutes, into kitchens as a means of saving energy and enhancing safety. The second is the design process around the residence kitchens. The latter was driven by the Practices of Governance seen in the previous cases in the form of experience from previous developments, the Student Experience as understood by those executing UEA Policy, and design decisions taken to enhance the student experience in situ. The practical outcome of this was the expansion of kitchen areas to include adjacent social spaces and the inclusion of a number of other social spaces around the Blackdale site to encourage social interaction.

Similarly to the first case the conversation below never actually took place, if nothing else, because it is constructed from the accounts of students living in different flats. Each statement is a reference to something that was noted by one or more residents in their interviews. While the account is anonymised effort has been made to reflect the views and experiences of the particular residents using, as near as possible, their own words. This case was chosen to showcase the various aspects of intentionality in interventions in practice as well as the scattering effect that the relatively chaotic Practices of Habitation have on how that intentionality results in different outcomes. There is also a brief discussion of the limits to the intention to govern and whether it is that inability or unwillingness to affect practice that affects the outcomes observed.

5.4.1 Kitchen Conversation

One afternoon, some of the students²¹ from Blackdale have gathered in the kitchen/social space of one of the flats. As students often do, they are talking about their experiences of student life.

Carl: Hey, what's for dinner?

Harry: I don't know what you're having, but this is chicken.

Carl: No need to be like that, smells good though...

Harry: I'm experimenting, there's only so many microwave meals you can eat. There's more to eating than survival, and you never know what you might like.

Carl: Fair... You've got a lot of them stockpiled though, you bring them from home?

Harry: Yup, whenever I go home, more food comes back.

Kalid: I only ever cook things in the Microwave now.

Carl: Yes, but at least you're not cooking bacon in it... I knew this one guy...

Kalid: Oh yeh, there's always one or two, wait 'till your third year. My parents are always telling me I should cook properly, just don't see the point.

Becky: Funny thing, I always used to cook properly at home, I still do when I go back, here though, no.

Lucas: I started out flat out, cooking all sorts of fancy things, it was nice, you know a place of your own, time to experience. Then everything kinda gets in the way.

Harry: And everyone...

Lucas: Balancing work, sleep, and time to cook with everyone doing the same, and money's a thing now...

Carl: For sure, I've had to learn to use as little as possible, just so I'm not in everyone's way all the time.

Harry: Personally, I take pride in discretion, I always clean up after myself.

Lucas: Yeh, but you're weird, you clean everything!

Becky: Does anyone else have trouble doing more complicated stuff because of having to leave it in and the oven going off?

Kalid: Not really.

Lucas: You've never used the oven... I did, when I was cooking bigger meals, if you want

²¹ All names are pseudonyms.

to do a lasagne, or a casserole, you've got to come back in every half hour and hit The Button²² again.

Carl: It's not like we don't spend half our time sitting in the corridor anyway.

Becky: Yes, it's weird, considering we've got these nice sofas to sit on, why do people sit in the corridor.

Lucas: Usually, just too hungover to make it here. They're good for special occasions, like rigging up the projector and doing movie nights.

Carl: Yeah man! But Bruno²³, that didn't need to be on a bigger screen. Never again, ok?

Lucas: Ha, sure.

Chai Li Enters as Harry moves to the sink to wash up the pan he has just emptied

Harry: Hi, where have you been?

Chai Li: We had a... A blackout and had to wait for the man to come and fix it.

Becky: Is everyone ok?

Chai Li: Oh, yes, just a bit of a shock, it was a loud bang, and then dark.

Harry: Do you know what happened?

Chai Li: The man said it was my kettle that blew a fuse. I didn't know, I got it from someone who lived here before. Apparently it happens a lot.

Lucas: Hmm... Dodgy plugs I'd guess.

Carl: I don't know, could have been anything really. I don't know who's half of this stuff is half the time. Everyone's got so much gear.

Harry: It's funny, I think people over-pack out of fear, I know I did.

Kalid: Just means each kitchen ends up with twelve of everything, and it still all gets lost!

Chai Li: I think in my kitchen we share a bit more

Becky: Oh yeah, you have those, cooking parties?

Chai Li: Hot Pots. Everyone brings something and it all goes into the pot.

Harry: That sounds nice, maybe we should do one instead of going out one night.

²² The Button is a device mounted on the kitchen wall that allows power to go to the oven and hobs for thirty minutes at the time before cutting off.

²³ Bruno is a 2009 film starring Sacha Baron Cohen and featuring explicit scenes intended to make its audience uncomfortable.

Carl: I dunno, a dozen Jaeger-bombs sounds much better!

Becky: It could be fun. And besides, if we're all here cooking, we can keep an eye on The Button.

Carl: Seriously though, why is it here? It's a pain in the arse!

Lucas: It's a safety thing... which makes sense, since the whole place is made of wood.

Harry: I thought it was to save energy

Chai Li: I'm pretty sure it wastes energy though

Carl: Seriously? That's mad...

Becky: You can turn it off you know. You have to hold it down

Lucas: Huh... did not know that.

Harry: Did no one read the manuals?

Kalid: I guess you just have to live with it, work around it you know.

Chai Li: I asked the cleaners about it once, they didn't really know what it was either, I hope my next house doesn't have anything like that.

5.4.2 Residents' Cooking Practice

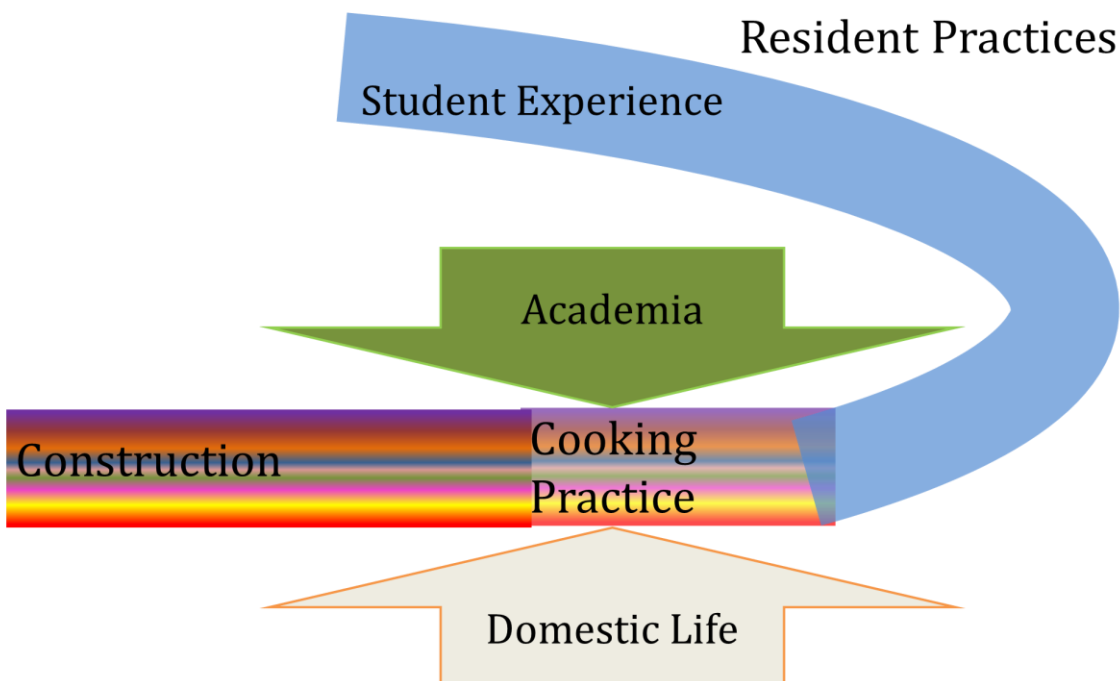


Figure 5.4 Practices within the finished residences are informed by those that created the structures they inhabit. Other significant factors also drive from outside the system, demanding time and providing practice elements.

The Student Experience is sourced from here, taking elements of the lived experience and using it then to drive policy (Figure 5.5).

The subject of this final case is that of cooking and more specifically that of residents' cooking within the residence kitchens. Cooking was selected as an object of study because it featured in every resident interview, which is not a surprise since it is an example of a practice performed every day. It was the only practice that was noted as taking place, every time.

This kind of everyday practice is perhaps what SPT does best in terms of its ability to describe and analyse. Similarly to the interviews with residents, cooking comes up regularly in discussions of what everyday practice is and is consistently used as an example (Reckwitz 2002, Hargreaves 2011, Spurling et al. 2013, Shove & Walker 2014). In much of the rest of the system practitioners are recruited as carriers of practice and are more or less interchangeable with them since they are solely engaged with the Blackdale system to perform that practice. Cooking is an example of a practice recruiting carriers as described by Shove et al. (2012).

Cooking as a practice is extremely variable in performance, consisting of various elements and connections between them. These also changed through time as residents adjusted to their new setting and arrangements of practice on campus. Whereas with more professional practices there are standardised methods and expected outcomes, the Practices of Habitation in residence are much more variable as they come from a much wider range of contexts and in some cases are being shaped much more by the timespace they are currently in. These everyday practices are not just varied but internally dynamic in a way not demonstrated at any other point in the system. They are being performed over a longer timeframe within which they are being performed continuously in the same or similar context for a year rather than, in effect, once over the course of months.

When questioned, residents sometimes found it hard to explain how their practices had changed since moving into their flats, except perhaps in terms of specific meals or items that they do not have any more. This is perhaps a little strange as the majority of

participants were first-year students who had never lived away from home before and as a result their practices would likely be radically different. Many had not been solely responsible for their own nutrition before, many had never owned utensils before purchasing them prior to arrival and virtually none had experienced communal living with individuals of their own age. These things represent a huge shift in practice, regardless of anything that might have happened since then, that went largely unmentioned, simply accepted as a new normal.

“[It’s] pretty much the same thing I was doing at home.”

Student 1M 6:15

This participant particularly notes that his practice had not changed. He had previously stated that his practice since moving in had gone through two different phases, with an initial phase of exploring more involved techniques giving way to a second phase of takeaways and ready meals simply because it was easier. As the burden of day-to-day nutrition impacts practice, meanings change from those of exploration and independence to speed and efficiency. This makes sense in context but is perhaps difficult to cater for from a design perspective other than simply not catering for specific changes. Indeed this unpredictability or perhaps lack of uniformity is a key part of this part of the system.

Cooking practice was informed by whole other systems of practice that there was simply no time to explore in any detail during fieldwork, but are nonetheless important because of their influence on resident practice. The two most notable examples were the previous home lives of residents, and the new timespace they found themselves in which was at least temporally shaped by their academic life. Home life had informed their practice both in terms of recruiting skills, meanings and artefacts from practices performed at home and in some cases in opposition to their current circumstances. Residents embraced their new performances precisely because they had previously not been involved in them in the same way. Another factor shaped in part by that transition was what artefacts were available and what was brought in at occupation.

“[Utensils, knives, spatula.] I brought the kettle with me, everything else I brought, all the utensils and pans and things. I was the only one that brought a kettle though.”

Student 18F 6:41

“A lot of the utilities that I needed here, I bought specifically to come to university, such as kitchen utensils.”

Student M6 12:59

As has been said, this example of everyday practice is not so removed from the mainstream SPT discourse so as not to be of interest on its own merits. It is included in this chapter because its novelty is in how it interacts with the other two cases and by extension the rest of the Blackdale system, both being governed and in informing further governance. This is explored in the next section where the significant interventions into the practices shown in the vignette are explored and their governance relationships explained in more detail.

5.4.3 Governance relationships of resident cooking practice

The previous sections asked what the practice of cooking was in the context of Blackdale. This section, using and combining some of Macrorie’s (2016) relations between practice, looks at what governs cooking practice for Blackdale residents and how the practice of cooking in turn governs others. The final part of this section specifically discusses the conversion between the experience of student life within the Blackdale development and the Student Experience as it goes on to inform the governance of whatever the next related system of practice will be.

The first intervention into residents’ practice from the system was the provision of social spaces. The relation between initial design work and the Practices of Habitation is determined to be experimental. While the intervention itself was not perhaps intended as an experiment it does fit the definition given by Macrorie:

“Previously unmade connections are purposely formed between practices in an exact way, which is studied to determine the outcome of producing these new relations” (Macrorie 2016 p257)

The inclusion of social spaces adjacent to kitchens was an attempt to include a wider range of practices within a slightly expanded timespace as well as engender a more communal feeling around the development. In addition there is the possibility that the more shared practice might lead to gains in sustainability and efficiency.

“I wanted a more community-based environment, which we haven’t got. The Ziggurats achieve it but not in a good way. Everyone gets crammed into their different kitchens. It’s not a very nice environment, and there’s nowhere, outside of the residences, for people to go and sit so I wanted to design that so I wanted inside and outside spaces where people could commune and talk about what they were studying and going through.”

Project Administrator 5:27

In terms of changing practices it is difficult to say one way or another that the practice below would have taken place within the flats with the inclusion of specific spaces for them. However it should be noted that the social spaces did recruit the practices they were expected to and they were noted as a significant aspect of the lived experience in the post-occupation surveys.

“Not as much as everyone else in the flat, I think, but still, quite often. We go into the kitchen and cook and sit and eat together, and sometimes we sit out there and do work ...erm, drinking?”

Student 18F 28:24

“We have a projector now, so, we bought a projector for the flat, and we have flat nights where we just project it over the wall and watch a movie, most Sunday nights, sort of like a movie night... in the kitchen.”

Student 20M 10:06

Another intervention made by the designers is The Button. Intended primarily as a fire safety device but also as an energy saving measure, it was installed in all the kitchens to regulate the energy that could be fed to the hobs – specifically limiting their unsupervised operation to 30 minutes at a time.

“It’s good, I guess, it’s nice but that’s, another thing, I think it switches off after a while so if you wanted to actually leave something on the stove for a few hours, like, you’re making a curry, you couldn’t.”

Student 20M 19:17

The practice relation in this case was one of chaotic standardisation in that it had a standardising effect on the timespaces that practice were carried in, but also interacted with a new set of practices in an unplanned way producing unanticipated results (Macrorie 2016). The Button standardises ‘cooking time’ to 30 minutes. On contact with the chaotic system of residents practice, the effect of doing this was extremely variable and unpredictable as some conformed the expected arrangement of cooking practice, some used the Button differently and some did not interface with it at all. Additionally, it was not entirely clear from the design why The Button was included. As well as the purely financial meanings involved, there are sustainability-based underpinnings of intervention plus those around fire safety. This ambiguity is suggested in the following quote:

“On the cooker hobs as well. You’ve got [the button], they’re only on for half an hour. [...] If that cooker hob’s running for longer than a half hour we’ve got a problem. The meter, it’s still running, and my guys give a damn [about sustainability].”

Maintenance Team Coordinator for Accommodation 38:17

It is possible that this intervention was included on the assumption that students are unlikely to be cooking large, complex meals that take a lot of time. It is equally possible that the necessity to either very carefully manage the timings of various aspects of cooking and related practices or be physically present the whole time during a large complex dish’s production may, over time, cause the cooking of students to simplify.

This would seem to be corroborated by the related experience of participants but could also be due to any number of time constraints. In a sense the Button causes, or at least enhances, competition between practices to reduce the overall time spent performing this highly energy intensive practice.

In addition to the five hundred or so residents being a varied group in terms of practice, one of the primary factors that seemed to influence the nature of cooking practice on campus was that being demonstrated within previous home life. Again, and even more so than with the Button represents chaotic relation too as “Previously formed configurations of practice are purposely reformed” (Macrorie 2016 p257) suggesting a demonstrative relationship but within a chaotic system residents’ practices are shared, adaptive and internally dynamic. The following quotes highlight that not only was cooking practice varied initially, but it varied significantly in how it changed- in the first months of occupation:

“Lunch, I used to cook lunch here, something light, like a bit of pasta or something. Maybe some toast, sandwich, that sort of thing, but generally more and more I end up just buying something from the Student Union shop. With dinner time, at the start I was going flat out cooking all sorts of chicken, bolognese... but now I, I’m too lazy now I just order pizza more and more.”
Student 1M 9:25

“I used to cook quite a lot at home, but not every day. So now I’m doing it every day I don’t really want to do it anymore. So, easiest and quickest stuff that I can do.”
Student 18F 7:54

Practices previously performed at home are brought into this system but often do not remain the same on contact with the lived experience of Blackdale. In several examples, residents learned new skills or incorporated others as well as simplifying their methods of cooking for expediency post-occupancy, this process could be considered domestication (Silverstone 1993).

The last relationship to discuss is not strictly with the Practices of Habitation, though it is anchored here. The succession of the three cases in this chapter is one of cascading practice where “a succession of outcomes is induced through practice linkage, each of which triggers or initiates the next stage in the process” (Macrorie 2016 p257). Each of the cases triggers the activation of the next. The Project Board meeting authorises the initiation of the design process, which shapes and eventually produces the timespace to be occupied by student practice. Post-occupancy information is gathered about residents’ practice and will be incorporated into the Student Experience imaginary and used as a predictor for what the next cohort of students is likely to need or desire so that those can be catered to or managed accordingly.

“I state it as the principle aim of a building is to promote an unparalleled student experience. [...] In Part two [of the Design Guide]: Architecture and Development Context, its audience is architects, and that’s where we have promoting of Student Experience and recommendations as to how that might be achieved”
Head of SUE 32:34

The above quote refers to exactly this process, with the Student Experience being translated into architectural practice through UEA policy development influencing the creation of the UEA Design Guide. This will in turn shape the experience of the next student cohort and in turn potentially add some new elements to the Student Experience as it manifests within future systems of practice.

5.5 Summary: Connecting Sites of Governance

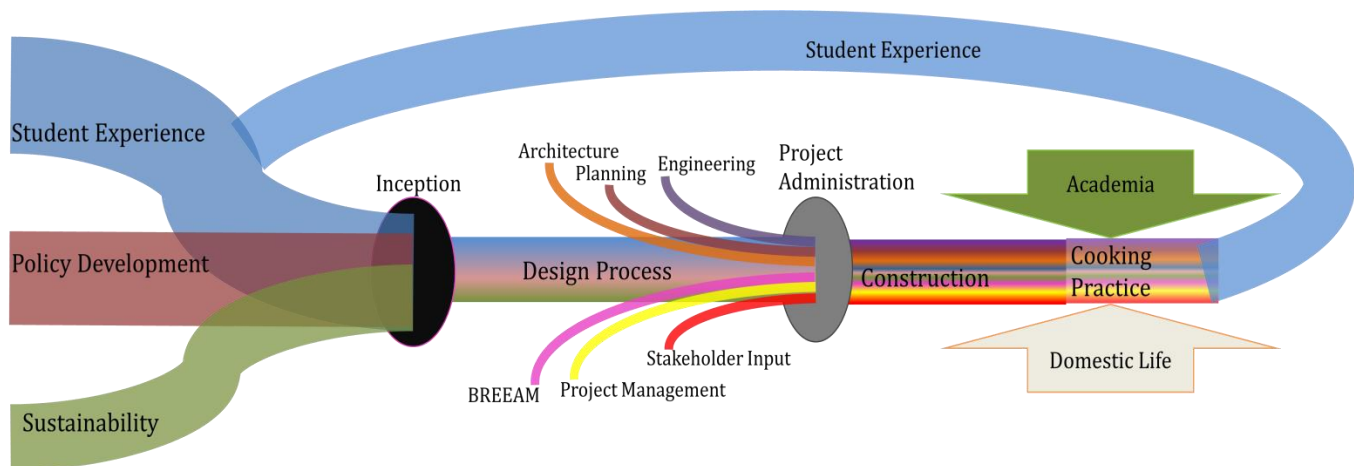


Figure 5.5 The combined case studies, drawing a line between then and demonstrating how one affects the next as well as how Student Experience is taken to drive and inform the next iteration.

While it would have been impossible to track and analyse all of the possible practice connections between and around these three cases, themes did become clear around the key connections after analysis. In the first case, three of the four connections featured influences from outside the meeting practice, shaping its effects going forwards. In the second case the theme was that of bringing together and binding practices. The third case featured examples of practices from outside the Practices of Habitation that each attempted to shape a part of the chaotic group of practices carried by residents with limited success. These represent three different ways in which practices, intentionally or otherwise, govern other practices.

Table 5.1 demonstrates the combining of the two primary literature sources for the classification of practice relations, Schatzki (2015) and Macrorie (2016). The use of both conceptualisations of practice relation in concert allows a more fully realised understanding of the connections within the system of practice. Much of this thesis is focused on the idea of putting elements of a system more in context. By combining Schatzki's (2011) more contextualised notion of practice arrangements with Macrorie's (2016) more comprehensive listing of types of practice connection, the meaning of the findings can be more clearly demonstrated than simply making up new terms to describe the same phenomena. This approach both grounds these findings in the literature and provides nuance and novelty to existing concepts.

Case	Key Connections	Definition	
The Project Board Meeting	Meeting and System of Practice	Enabling	"Links between practices purposely created/ encouraged to commence" (Macrorie 2016)
	Student Experience and Meeting	Emergent Intelligibility	The Student Experience is emergent from Practices of Habitation and it emerges through the everyday practices of residents "having meaning for – being intelligible as such and such to – participants in a practice." (Schatzki 2011)
	Policy Development and Meeting	Standardisation	"The faithful reproduction of practices occurs according to a specific set of interconnections" (Macrorie 2016)
	Meeting and its sociotechnical context (UEA)	Prefiguration	"The difference that the present makes to the nascent future." (Schatzki 2011)
Design	Project Administration and design practice	Constituting	"One or more practices make-up a bundle/complex or system of practice" (Macrorie 2016)
	Building Control and design practice	Standardisation and Reinforcement	Ensuring the "faithful reproduction of practices occurs according to a specific set of interconnections" [and the] "stability of the configuration of practices is enhanced" (Macrorie 2016)
	Consultation practice and Governing practices	Enabling Cooperation	More a relation between relations than one of its own. The consultants' practice facilitates greater linkage between practices of governors, professionals and agents in order to capture greater time, space and resources and thereby speed up the production of the development more generally
	Between siloed (D&B) governing practices	Cooperation	Cooperation by those coordinating professional practice in order to avoid competition between practice which saps the overall amount of time and resources available to the Project

Resident Cooking Practice	Provision of social spaces and cooking	Experimental	"Previously unmade connections are purposely formed between practices in an exact way, which is studied to determine the outcome of producing these new relations" (Macrorie 2016)
	Power Button and Cooking	Chaotic Standardisation	A standardising interaction, introduced into a "set of practices connect/relate in an unplanned way, producing unanticipated effects" (Macrorie 2016)
	Home life and Cooking	Chaotic Demonstration	"Previously formed configurations of practice are purposely reformed" (Macrorie 2016), but within a chaotic system residents' practices is shared, adaptive and internally dynamic.
	The three cases and the Student Experience	Cascading	"A succession of outcomes is induced through practice linkage, each of which triggers or initiates the next stage in the process" (Macrorie 2016)

Table 5.1 Key practice relations present within the three of the cases for Chapter five. Definitions drawn from Schatzki (2011) and Macrorie (2016) and found in Appendix 9.

In terms of connections between the cases, there is a strong link between the meeting and design process. This is driven by the creation of the initial brief by the University, which then produces the specifications that drive construction. The project administrator being present and involved within both cases provides a strong, single linkage between the two. This linear connection suggests that a decisionistic, hierarchical power structure is operating as expected but the powerful constraining variables acting on the meeting practice continue to demonstrate that this traditional model does not provide a full account.

The final case, of cooking practices, remains isolated from the others in that there are no direct connections between practices or those that do attempt to intervene do not do so fully. Examples of this include the relatively limited or unreliable influence carried by

The Button or the provision of social spaces, which do not have a consistent effect although they might affect elements or timing of practices. As noted in Chapter four, this isolating effect is much more widespread than simply between designers and the lived experience. It is still unclear whether this effect is driven by an inability or unwillingness to directly govern student practice but the outcome and feedback within this system, the Student Experience, suggests a certain agnotological approach (Mcgoey 2012). This involves the deliberate cultivation of a certain level of institutional ignorance in order to be able to, in this case at least, form judgements and act in an unpredictable environment. It allows the creation of the average 'Student Experience' student as a model, and a collection of proto-practices to work from when planning. The understanding of, and production of facilities for, this average student leads to a great deal of information pertinent to building around elements or practices that residents might carry to be lost or ignored in favour of metrics that can be more easily converted into statistics.

5.6 Conclusion

This chapter aims to answer the question:

“What are the relationships between practice and governance within this system?”

Practices are governed through their interactions with other practices. Practices interact with each other to create timespaces, drive decisions or form projects that achieve a particular goal. These interactions can take many forms and be formative, destructive or chaotic but the outcome is usually creation of timespaces for another set of practices to inhabit. Practices that intentionally govern within this system often do so through the allocation and curation of practice within timespaces. The performance of the Practices of Governance involved in these processes can be quite different and involve different types of practitioner relationships. Once a vision is produced by the Practices of Governance it is then enacted by the next connected set of practices within its given timespace.

The first case introduced one of the primary Practices of Governance in this system. It shows that the Project Board creates an initial design brief and a mandate for new residences but very little in the way of specifics, to allow space for design practices

carried by professionals to add the benefits of their practice to the project. This case also shows that this Practice of Governance is itself governed in its decision-making by financial and operational forces as well as understandings of sustainability and feedbacks in the form of the Student Experience from previous interventions. Even Practices of Governance operate within a timespace allocated to them by the systems of practice they inhabit.

The design project is very much a case of recruiting and coordinating practices and binding them together through the performance of Practices of Governance. These include the initial creation of a vision by the Project Board and a more detailed one by the Design Team. The design becomes slowly more firmly instantiated as more professional practices are added to the project. Design practice is split by the D&B contract structure and so this duality must also be steered by two combined sites of managing practice. This binding practice and the reflexive process of maintaining it is a useful model of reflexive governance in practice.

In the final case, rather than tracking the effects of a practice or performance going forward, looked at the external influences on a practice in situ. It finds that the Blackdale system influences Practices of Habitation less than might be expected by a behaviourally-based ontology. Everyday practices are largely insulated from construction or management practices, while others such as home life and social and academic time pressures have much more impact on resident practices and need to be taken into account if the intention is to govern them. This being said, there is also an aspect within the executive and design practices that ostensibly govern this system that Practices of Habitation are to be allowed to develop on their own with more latitude given to them than other more strictly governed and regulated practices elsewhere in the system.

If governance is seen as part of a system of practice it looks and behaves differently to how it might be understood otherwise which necessitates a different approach to accomplishing it. When taking the many connections between practices into account it becomes obvious that governance must be an involved process. It must remain in contact with the practices it intends to govern in order to manage the dynamics of those

practices through time and their interactions with others. The next chapter looks at some of the examples and successes of this more cumulative and reflexive governance within the Blackdale system, and asks how this might be applied to enhancing the sustainability of systems of practice.

Chapter 6: Governance of Sustainability

Chapter four described the Blackdale system and demonstrated how practices within it govern others across broad groups. Chapter five addressed how practices govern at key points within the system, highlighting specific aspects of the relationships between practices. Chapter six addresses what sustainability means in terms of systems of practice and what role aspects of reflexive governance might have in its governance going forwards. Specifically, this chapter is answering the third research question:

“What are the implications for reflexively governing systems of practice for sustainability?”

To form an answer to that question, Chapter six is broken down into three sections. The first section explores how sustainability manifests in a system of practice. From there, the next challenge is to investigate how reflexivity appears in this system and the particular ways in which it is both encouraged and constrained within first order reflexivity (Voß et al. 2006). Finally, possibilities for the reflexive governance of a system of practice are imagined. By necessity this process includes addressing different orders of sustainability and scaling up existing examples to a more system-wide framing or reflexivity. The aim in doing so is to provide a comprehensive set of implications for reflexive governance of systems for sustainability.

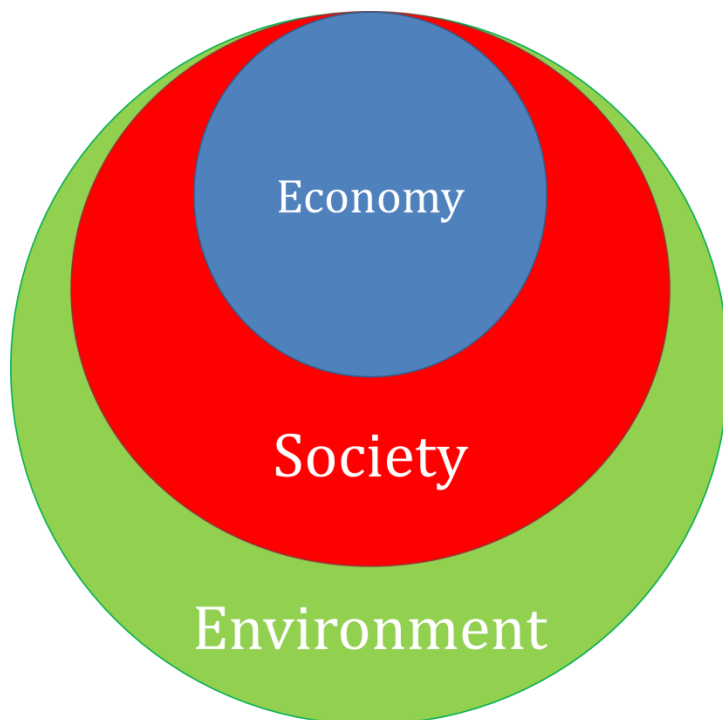


Figure 6.1 Adapted from Cato (2012): the ‘Pillars of Sustainability’, each nested within the last, indicate the interconnected nature of aspects of sustainability that could otherwise be defined as separate.

The first section will address the differences how sustainability, as defined by the UNCED (1992), appears throughout the system of practice. The manifestations of sustainability include number of different understandings of sustainability (economic, social and environmental), with the addition of performances of practice that sustain aspects of the system that may not themselves be sustainable. Because of the nested nature of these forms of sustainability, for a system to be considered truly sustainable it cannot address any of these elements in isolation. Sustainability has been a contested term for as long as it has existed (Walker & Shove 2007) and section 6.1 highlights this not just in the sense of how sustainability is understood but in how it manifests in performance. The performances of sustainability transfer relatively well between the first two cases but differ significantly from the third, representing a break in the system and how sustainability is transferred around it.

Section 6.2 introduces a possible solution to the fracturing of sustainability using examples of reflexive governance (Voß et al. 2006). Specifically referring to reflexive practice as it is found within the Blackdale system, the section notes some examples of reflexivity that are highlighted as positive aspects of the system as a whole. It goes on to

note that these are examples of first order reflexivity rather than second order, and thus do not represent radical shifts in practice towards sustainability. Second order reflexivity represents a radical departure from how this system might operate and would likely involve it looking very different, or not occurring at all.

Despite that rather blunt assertion it should be noted that the Blackdale development was widely considered to be a success. It was completed on time and on budget, a relative rarity in itself, to a high specification and on a very tight schedule. The Blackdale development achieved a BREEAM Excellent rating along with being constructed from low-carbon materials and incorporating on-site renewable energy systems, apposite insulation and a number of innovative approaches to energy saving in day to day use. It should therefore be considered a sustainable building, at least in its own terms. There were a number of governing systems in place or in development that aided in the success of the development as well, in addition to the technical successes. Reflexivity is by no means entirely novel in that it needs to be inserted wholesale into systems of practice but simply something that is already present that needs to be encouraged and expanded on.

Despite the notable success of the development and some of the reflexive processes that are responsible for it, Blackdale remains an example of first order reflexivity. The third section of this chapter will address what a system of practices governed through second order reflexivity might look like. This means addressing sustainability at a systemic level rather than as a series of smaller problems to be addressed in isolation. Several approaches are suggested, including emphasis on co-design, mapping systems and anticipatory visioning practices. Utilising those practices should engender more distributed reflexivity and a more systemic realisation of governance for sustainability. The previous chapters have shown that Practices of Governance are often binding agents, connecting practices with shared intentionality into projects and a heightened focus on reflexivity can enhance this process by more securely bonding those projects with others and allowing for greater systemic cohesion.

6.1 Sustainability in Performance

This section comments on how sustainability is instantiated in practice. Specifically, it will explore how various definitions of sustainability result in different performances of practice. Despite its association with sustainable development, the concept of 'sustainability' was always based on more than avoiding environmental degradation. The UNCED Rio summit (1992) understood sustainable development to mean a combination of economic sustainability within social sustainability within environmental sustainability. Sustainability is manifested in practice in many different ways, pursuing each of the various definitions towards ideally shared, but often conflicting goals. Alongside the three pillars, this chapter also references a fourth definition, the status quo. This carries an aspect of sustainability, but not one concerned with development so much as maintenance of systems and materials that currently exist. This variant of sustainability is more concerned with avoiding short-term collapses than longer-term degradation. As such, it is not always in line with long-term sustainability goals either. This is important because in this case, addressing the "full, messy reality of governance" (Voß et al. 2006 p5), goes hand in hand with addressing the ambivalence in concepts of sustainability (Walker & Shove 2007) which themselves impact how governance can take place within systems of practice.

This section follows the three cases used in the last chapter to highlight different governing relationships within the Blackdale system. In this chapter the object of scrutiny is how different types of sustainability become apparent in the performance of practices at various different points of the system. In Table 6.1, aspects of sustainability that appear in the vignettes of each case are grouped by the pillar of sustainability they correspond to along with the elements of practice that particular performance of sustainability interacts with.

Sustainability is often spoken of in SPT discourse in terms of meanings, and this is likely to be a hangover from our understanding of sustainability interventions as addressing behaviour change and information deficits (Shove 2010). Sustainability is not something that can be 'done' and as such it is not a practice in and of itself but rather a way that things can be done. As such it can affect any number of elements of practices. The secondary point in saying this is that each 'X' in the table below represents the

'main' interactions involved. Due to the nature of practices it would be almost impossible to affect only one element at a time and to focus on that would likely detract from the core themes being expressed, getting lost in trying to pin down which element was being changed. While acknowledging this, this section aims to shed light on the variability of potential interactions coming from just one motivating concept within a system.

Vignette Pillar	Project Board Meeting	A	I	S	Design Practice	A	I	S	Cooking Practice	A	I	S
Economic	Recruiting to raise more funds Target number of new rooms at 500+	X	X		'Value engineering' Imperative for large number of rooms	X X	X		Balancing personal finances Sharing artefacts between cohorts of residents	X		X
	Continued growth of the campus	X			Design focus on ease of maintenance	X		X				
	Technological efficiency and energy savings	X			Quantity Surveyors' cost matrix	X						
					Splitting of Design and Build design				X			
					Loss of greywater system due to payback time	X	X					
					Standardisation of equipment	X						
Social	High specification to correspond to Student Experience goals	X	X		Early prioritisation of communication			X	Alterations to cooking practice to match new timespaces			X
	Maintaining UEA's reputation for innovation		X		Design of social spaces	X			Sharing elements of cooking practice	X	X	X
	Focus on creating a sense of community	X			Assessment of impacts on the local area	X		X	Maintaining personal relationships		X	X
					Consultation of local stakeholders			X	Cooking as a form of social cohesion/interaction		X	X
					Maintenance of links with local companies			X				

Environmental	Refurbishment to adhere to new environmental standards	X			Aiming for BREEAM Excellent rating	X		X	Personal responsibility for environment		X	X
	Carrying through learning from Crome Court		X	X	Using BIM software to learn from Crome Court design	X			Recycling	X		
	Noting social activity as a way to reduce individual energy usage		X		Efforts to avoid disruption to local trees	X		X				
					Aspirations towards Passivhaus	X						
Status Quo	Refurbishment of aged infrastructure	X			Adherence to regulations	X			Stockpiling of cheap/fast food	X		
	Acknowledging the relative lack of control over residents practice relative to more specialised building stock		X						Interfacing with the available technology in kitchens	X		
									Creating strategies to work with or around the Button	X		X
									Sourcing of artefacts and skills ahead of arrival	X		X
		7/ 12	5/ 12	1/ 12		14/ 18	2/ 18	8/ 18		7/ 11	4/ 11	8/ 11

Table 6.1 Performances of sustainability present in the Chapter five vignettes, grouped into the three pillars of sustainability with the addition of status quo representing the sustaining of unsustainable practice as part of everyday life. The columns represent which element of practice the performance is concerned with: each corresponding to Artefacts (A), Images (I) and Skills (S).

6.1.1 Elements of the Project Board meeting

As discussed in Chapter five (5.2.2) the decision being made in the Project Board vignette was dominated by economic concerns and the need to refurbish key parts of the campus infrastructure. The final decision was pre-figured by the need for physical upkeep of the campus and the planning and policy involved as well as the need to address the Student Experience. These themes coloured the examples of performed sustainability seen in table 6.1.

The interactions here are primarily image or artefact based, which matches the expected approaches to policy, as they are primarily based on technological fixes and addressing information deficits to change behaviour (Shove 2010, Hargreaves 2011). The homogeneity of these approaches also perhaps reflects the relative lack of varied specialist input present in other cases, limiting the potential interventions to those that are technological or information based.

“[Sustainability] is a balance between [...] financial, social and environmental and at the moment the emphasis [is] more on financial, but not at the cost of the environment. Yes there’s less emphasis on the environment at the moment because we need to find a lot of money to refurbish the Teaching Wall, but if there’s no University because it’s gone bankrupt, there is no University.”

Head of Energy and Utilities 39:40

This quote represents the images present in the meeting in terms of the need to both preserve the status quo of the campus and its financial sustainability, but also to actively build towards reinforcing that sustainability through increased earning potential in the future. Much of the Project Board’s understanding of sustainability comes from its function of balancing the expected lifecycles of artefacts in the built campus. The need to refurbish is key to how sustainability is understood within the campus infrastructure. It involves the continual management of the overlapping lifecycles of the various pieces of infrastructure, and the constant push to get the longest lifespan for the smallest capital outlay. This is important because it prefigures the interventions around sustainability towards more, better buildings without looking for possible alternatives to increased construction.

“The fact that the Vice-Chancellor said the refurbishment of the Teaching Wall will have low carbon considerations throughout...”

Environmental Officer 21:00

References to refurbishment are found in all four cells of this vignette; it is a core theme in both understandings of economic and environmental sustainability for the UEA campus. The refurbishment project is so central to the understanding of sustainability within campus decision-making that is viewed as an economic challenge, and environmental opportunity and an absolutely normal part of the practices of the built environment simultaneously.

Another way in which the University system conceptualises its own practices is by means of supporting and crafting the Student Experience. The Student Experience is an imagined proto-system of practices around the everyday lives and needs of students that may or may not correspond accurately to the everyday lives of Blackdale residents, but nonetheless informs decision-making on the subject. It informs the addition of social spaces which, while having a limited effect on the environmental sustainability of the buildings, play a substantial part in enhancing social sustainability within residents' practice. Social spaces also potentially impact on the economic sustainability of the project as a whole by making the Blackdale flats more attractive as living spaces to potential applicants and parents who are likely to be paying the rent on rooms (Royston 2016). This is important because, as described in Sections 6.1.3 and 6.1.4, there is a notable gap in the flow of information between everyday student practices and the understanding of decision-makers as to how the finished buildings are to be used.

“At the moment we're, to some extent, guessing what students want and ultimately we have to deliver what students would like to see but without a community to ask those questions of, it's still guessing...”

Environmental Officer 08:48

This gap is noted by the Project Board members and is the performance of a sort of learned powerlessness or unwillingness to closely govern the practices forming the lived experience of residents' everyday life (McGoey 2012). This goes some way to

explaining why the interventions aimed at increasing the sustainability of Blackdale are primarily technological as this is an arena that decision-makers feel they can work in with authority. These two examples highlight the strange relationship between the lived experience and the decision-making structures understood to govern it.

This section highlights the heavy focus on technological fixes present within this governing practice. The combination of a focus on technological innovation and the need to make financial and environmental space to refurbish existing artefacts drives much of the understanding of sustainability. The addition of a secondary focus on images around sustainability corresponds to the sort of techno/behavioural approach to sustainability that one might expect to see in a body of this type. Here we also begin to get a sense of the separation in understandings about sustainability between the first two cases and the third, which will be explored further in the following two sections.

6.1.2 Elements of Design Practice

This section looks at the performance of sustainability seen in the design project. The most immediate impression to come out of Table 6.1 is that the understandings shown are heavily weighted towards artefacts and that there is a greater variety of them within the design column. Design as a practice is primarily understood as the arrangement of artefacts into a greater whole; it is understandable therefore that many of the understandings of sustainability shown here would be manifested within physical objects. The greater variation in instantiations of sustainability is most likely a result of the sheer number of practices that combine within this project or interact with it. There are influences drawn from five different projects as well as a wide range of professional and governing practices, and design is itself split between two projects with different aims. Design treads a path between a wide range of understandings of sustainability, from stakeholder interactions to policy enforcement and includes all of the professional and construction practices in between. The work of governing design is balancing the internally-warring definitions between the three pillars of economic, environmental and social sustainability.

“So, [Contract manager] manages his team, you’ve got all these designers in his team as well on the design and build contract, which, novations. So he’s managing those people, and I’m managing these people on the client side.”

Project Manager 9:31

As the above quote attests, design consists of a great many different practices from numerous sources. It is understandable therefore that a certain amount of conflict might arise between them. The push for a larger number of rooms and value engineering process both enhance the viability of the development in terms of short-term financial sustainability, but significantly damage environmental sustainability both of this building and arguably of the residents’ practices as performed. This stands to highlight the variability of concepts of sustainability even within quite limited parts of the system.

Notable by its absence is the concept of the status quo to be maintained. Design practice is at least intended to be the ordering of a new arrangement of elements where none existed previously, therefore either there is no status quo to be sustained in this example or the practices being performed in this timespace are changing. The more theoretical argument is one of connections between systems of practice. In the case of the governors or designers being brought in from outside, the sustainability they perform to maintain a status quo is manifested in systems that are not defined within the bounds of this one and so any challenges to it would go similarly unobserved. The exception to this rule is the adherence to regulations. As an understanding of operational sustainability regulation is required for the practices to take place within this timespace but also consistent enough between systems to be considered part of the status quo. This stands as an example of how outside forces can permeate a project to the point where performances of practice within it can be seen as ordinary working practice despite being the direct result of interventions from outside.

The focus on the physical creation of a space goes some way towards explaining the predominance of artefact-based understandings of how sustainability is instantiated within the finished system. This is even more clearly demonstrated within environmental sustainability, which is considered within this project to be a technical

challenge above all else. In contrast to this, the economic performances of sustainability are linked to different elements of practice, suggesting that they may be more integrated into the Practices of Construction. This is important because there will be instances of environmentally unsound practice being locked in while economic concerns are given primacy as part of standard practice. An example of this is the loss of the proposed greywater system. As seen in the quote below, this was a decision consistent with the economic sustainability of the development but will lead to the finished building having a higher environmental footprint.

“That’s one of the things I was disappointed about. I wanted to have things like the grey-water recycling, or living water... But I think we lost some of that, we took a step back for Value Engineering purposes. It’s disappointing to take a step back having made such good progress with Crome Court.”

Head of Accommodation 1:04:18

While the economic and environmental examples of sustainability are primarily artefact-based, social sustainability is addressed very much through skills. The only exception to this in Blackdale is the creation of the social spaces, which is itself more an intervention into the social sustainability of residents’ practice than those of Design. These understandings are based in interactions between practices rather than intervening in any specific one. It seems intuitive that communication is a key part of social sustainability, but in this case the management of the relationships between practices was crucial throughout. This is important to note because there is a theme that continues throughout the three cases that social sustainability is addressed differently to the other pillars. While Table 6.1 does not particularly indicate a lower status or urgency being given for more social understandings of sustainability, it does suggest that this understanding of sustainability is approached differently within practice.

Within this section there has been a discussion of the way design creates a novel environment and lacks the status quo elements of sustainability found in the other parts of the system. In addition, there is a wider variation in understandings of what sustainability is and how it is embedded in practice than elsewhere. This led to more conflicts between instantiated concepts of sustainability. The approaches to embedding

different understandings of sustainability in practice are quite starkly different between the economic or environmental and the social. Having considered how understandings of sustainability are performed in the governing structures of the system, it remains to interrogate how they interact with those of the lived experience and what the nature of those connections might be.

6.1.3 Elements of Residents' Cooking Practice

The performances of sustainability seen in this section were very different from those seen in the other two cases. Understandings around economic sustainability and the environment are virtually absent while social sustainability and the maintenance of the status quo become prominent. Performances are also much more limited in scope, being limited largely to the timespace of the residences post-occupancy. This section also highlights the disconnect between this and the first two cases. Compared to the design process it could be ascertained that the differences in performances of sustainability are down to the much-reduced scope, looking at a single practice rather than a group. However, the Project Board meeting is a single example of a single practice and yet that also has a very different set of understandings and actions around sustainability. This suggests that there is something fundamentally different about how these different cases approach sustainability.

Much of residents' cooking practice since arrival has been concerned with learning how to use the various devices provided to them and in many cases the utensils they brought with them, even when some had cooked before at home. This is represented in the status quo cell as much of what is being sustained regards the artefacts involved. The status quo in this case is dealing with sustaining the 'now' by adjusting to changes within it. The change in locale is not so much an intervention as it is a change in the normal, which now must be maintained. This is one of the key insights of this chapter in that it draws a strong distinction between everyday life and governing practice as well as anchoring this work back to some of the relatively early thinking on SPT as it pertains to changes in everyday practice (Shove et al. 2012). Ordinary life, however much it might have changed recently, is what this cohort considers itself to be sustaining.

“Lunch, I used to cook lunch here, something light, like a bit of pasta or something. Maybe some toast, sandwich, that sort of thing, but generally more and more I end up just buying something from the Student Union shop. With dinner time, at the start I was going flat out cooking all sorts of chicken, bolognese... but now I, I’m too lazy now I just order pizza more and more.”

Student 1M 9:25

“I used to cook quite a lot at home, but not every day. So now I’m doing it every day I don’t really want to do it anymore. So, easiest and quickest stuff that I can do.”

Student 18F 7:54

There is little or no impetus towards creating anything new because residents are still dealing the current ‘new’ of their living arrangements. This new normal goes a long way to explain how the status quo becomes such an important part of this case. As seen above, many residents have a different relationship to cooking than they did at home and that relationship often remains dynamic. Several stated that while they had not cooked for themselves they have learned, while some stated that while they used to cook at home relatively regularly they have stopped now and instead cook very simple meals or order takeaways.

We find performances related to the creation and maintenance of new social bonds within the social sustainability cell. Given that many of these are first-year students, these are likely to result in ongoing relationships which might transcend this timespace and be carried into another location. The cultivation and maintenance of personal relationships is one of the primary things being sustained in this case. Through these relationships elements of practice are shared, either in the form of cooking utensils or food or actually cooking practice. As seen below, in many cases, particularly among the East Asian cohort, cooking is used as a form of social interaction where many of the home students may drink instead. These everyday practices frame the idea of sustaining very differently to the larger more systemic practices of the other cases.

“Not as much as everyone else in the flat, I think, but still, quite often. We go, into the kitchen and cook and sit and eat together, and, sometimes we sit out there and do work ...erm, drinking?”

Student 18F 28:24

“In the weekdays I will always cook by myself but in weekends we will always go together. We always have the hot pot.”

Student 3FI 8:18

The previous two cases were concerned with economic sustainability as their primary business, both being profit-making entities. Economic sustainability is almost absent as a consideration in cooking practice, with the only exceptions being the balancing of spending habits and the sharing of artefacts between residents to reduce costs. One particular example of the latter, largely localised within the population of foreign nationals, is the sharing of domestic equipment between different cohorts of residents to avoid shipping costs. The most recent cohort to leave can simply leave materials for use by the incoming one.

This is worth noting because it causes a problem for Maintenance and means time and resources are spent policing and repairing damage done by faulty, uncertified or poorly adapted equipment without significant action being taken to limit it. This is despite these issues being well known and much lamented, and represents a lack of learning happening between the lived experience and those responsible for its timespace from one cohort to the next.

“The rice cookers, none of them have got CE marks on them. They’ll wipe us out, they’ll blow up. ‘Oh, that’s a 2pin let’s put it in a 3pin...’ Bang!”

Maintenance Team Coordinator for Accommodation 46:33

It is entirely possible that residents’ balancing of debt and income is actually not within their personal control since they are, at this point, abstract things that are dealt with by other agents. Good examples of this could include rent that moves between parents and the University without students actually being involved, or student loans providing a

set, unearned income with an uncertain and variable payback time all leading to a sense of detachment from the realities of financing.

There is a definite difference between performances of environmental sustainability in the wider system and within the lived experience. That is to say, that those performances are almost completely absent. Any interest that residents might have had in environmental issues did not manifest strongly in their practice within the residences, or indeed in their choice of accommodation, being overshadowed by images of 'newness' and quality. This could be a symptom of the limited scope of this case; understandings of environmental sustainability displayed were mostly centred on the environment in which practices were performed, namely kitchens and bedrooms. Direct references to the environment were concerned with the immediate environment and the skills and meanings surrounding, for example, keeping it clean.

"I take a lot of pride in being discrete; I'll never leave anything in the basin. As soon as I've... like, in the process of making something I'll wash up and put away things I'm not using as I'm doing it and the second I'm done I want it cleaned up and put away so I'll do that, because [I] hate to be a burden on flatmates."
Student 15M 13:42

The key message from this section is the disconnect between residents' practices and the rest of the system, which is more concerned with governance and construction. Residents have a markedly different understanding of economic sustainability than the more business-focused cases and are much less involved with performances linked to any environmental sustainability. In terms of social sustainability there is again a marked difference between the three cases, with very different understandings and approaches being employed. The previous cases create the social spaces and the Practices of Habitation inhabit them and are engaged in maintaining the resultant relationships and not physical spaces themselves. What is being maintained is much more immediate, such as cleanliness and being able to buy food rather than there being any sense of moving towards a goal.

6.1.4 Sustainability across the three cases

There is a quite radical shift between the first two cases and the third in terms of the way that sustainability affects practice. The meeting and the design process both have strong economic elements as well as aims towards environmental sustainability, while cooking has a stronger status quo aspect and is much more concerned with the maintenance of everyday life than any kind of change. The initial decision to build does not take the practices of everyday life into account past the very basic, such as sleeping, washing, eating and socialising. Conversely the practices of everyday life only pay attention to design decisions when those decisions directly impinge on those practices. This represents a distinct lack of reflexivity between practices of the lived experience and governing practices.

All three cases are attempting to achieve and maintain something different, regardless of the practices being performed. The initial decision being made is concerned with sustaining the University. The design phase is anchored in producing an excellent building for minimal outlay. The lived experience seems primarily concerned with the maintenance of itself. Both decision and design, focused on the technical aspects of the challenges they face, are not concerned with practice and how they intervene in it.

Similarly, there are versions of sustainability that may be left out of this model. Hickling and Barton are halls of residence being created by an academic institution, that academic success is a big factor for the continuation of student life. Considering this, 'academic sustainability', however this might be defined, does not feature anywhere. Short of massive disciplinary infractions, only failures of financial sustainability represent a significant barrier to the sustainability of everyday life for residents. If a student cannot, or refuses to, pay rent for any reason then this represents a failure of this aspect of sustainability. This may not have had a huge impact on the rest of the system in the case of Blackdale because this is the most expensive and highest quality accommodation offered by the University, and students who are likely to have financial issues are much less likely to apply to live within it. Similarly, because these are the 'best' rooms on campus there will always be a demand for them and so the failure of financial sustainability within any given room will not affect the whole as the practices taking place within the building are simply exchanging one carrier for another.

As described in Chapter five (5.4.3), much of the governing relationships around residents' practice, such as studying and home life, are taking place outside the Blackdale system of practice. It follows then that much of what influences the sustainability of those practices is also informed by those outside forces. As an example, the known problem with 'non-home' (UK) students bringing rice cookers is not featured in the vision of the Student Experience despite it being well known that one of the two Blackdale buildings was going to be given over to non-home students. That this issue does not feature in the Student Experience is representative of a fundamental flaw in the movement of information from the lived experience to the governing practices informing its next iteration.

The social aspects of sustainability such as affordability and living standards do not feature strongly anywhere in this system, which is not to say that none of the practitioners involved consider them but that they simply do not have to appear. Students and their representatives are consulted very early on in the design process on the quality of accommodation in terms of specifications and price without giving much attention to any other aspect.

“The only things we've been consulted on are the prices of the new buildings, so, the accommodation prices but to be honest we don't really get consulted on them. The prices get decided and we get asked to pick.”

Students Union Welfare, Community and Diversity Officer 2:17

If asked, both sets of practitioners engaged in this exchange state that they want the highest quality for the lowest cost. To the designer or decision-maker that question is determined by the economic thinking that dominates the meanings around their practice and becomes a question of payback efficiency. As such, they might lean towards markers of quality that may not be required by residents but that allow for higher pricing and a shorter payback time. This clashes with the priorities of a student representative who might be prepared to compromise on that quality to produce more affordable accommodation.

“Some students don’t want an en suite in every single room. Some students are happy sharing kitchens and paying less, but [the University] don’t seem to listen to that.”

Students Union Welfare, Community and Diversity Officer 4:23

This clash is not strongly demonstrated in the Blackdale system because it is producing the ‘best’ accommodation on the campus. Residents who are likely to encounter financial hardship during their time as students are simply not living in these flats. Residents’ financial situation is the only factor likely to jeopardise the ‘sustainability’ of their lives as students that is strongly connected with any of the practices that make up the Blackdale system. If the scope of this work had been expanded to include the full range of housing offered by UEA then it might have been a significant factor but because Blackdale is the premier accommodation for the University the cost of living there never becomes a sustainability issue as the only deciding factor for those who live there is that they are the ‘nicest’ rooms.

“Whenever I say to anybody ‘Oh I live in Hickling’ it’s all ‘Oh, they’re really expensive, they’re really nice’. That’s the two biggest responses you get.”

Student 20M 21:35

The diversity of the lived experience of residents is also underplayed in terms of the Student Experience. It simply does not address the practices carried by students from day to day, treating these activities as a ‘black box’ (Shove & Walker 2014) in the shape of an assumed proto-practice. It is entirely possible that this is done deliberately to allow residents freedom and to not be seen to be policing their private lives. Another possibility is it is simply too expensive and time consuming to generate this kind of data using current methods.

Faced with not being able to dictate practice and not being able to gather data from residents on their practice the last recourse is a more technical solution. The designers design the building to have certain tolerances in terms of the environment it can provide such as the amount of water, power, air circulation and heat that can be provided per minute. Once occupied, the building performed adequately; this suggests

that whatever residents' practices were, they were within the expected tolerances and any deviations were dealt with by the management project. There is no real incentive to change how information is gathered within the system because the methods used to indicate success indicated that it was performing adequately.

Residents' responses to their accommodation were generally positive and the buildings have not suffered significant mechanical failure since occupation. It follows that economically and socially this system was successful and it requires sustaining rather than intervention. The preponderance of economic and social, but primarily economic, aspects of sustainability within this system might be an indicator of a more surface level understanding of what sustainability means. Even the environmental accolade noted with the introduction of the case (3.2.2), its BREEAM certification, is considered by many to be a rather superficial measure of sustainability akin to ticking a box, rather than meaningfully addressing the issue. If a deeper understanding of and relationship with sustainability in all of its aspects is to be attained there needs to be deeper interrogation of what sustainability means. To achieve this will require a much greater degree of reflexivity built into the system.

The scope of sustainability within the cases does change rather a lot from a systemic approach around the University to the view of how the design of a single building affects the surrounding community and environment to a single practice as it is carried by a quite specific cohort. Economic performances of sustainability are much more prevalent earlier because they represent a much more immediate and tangible risk to the sustainability of the systems they represent. Both of the first two cases are affecting a change in some way while the last is reacting to one and this has an effect on what status quo means in each case.

Taken together, the issue across the three cases is a failure of reflexivity. Where elements are transferred through and between practice these processes could be more effective. A more reflexive relationship between practices within the system could be beneficial in terms of allowing approaches to and performances around sustainability to more effectively transfer across. In the next section there is a discussion of the reflexivity already present within the Blackdale system. This includes those specific

instances in which it was integrated well and proved beneficial as well as how such instances are too tightly contained to be useful on a systemic level at this time.

6.2 Reflexive Governance Implications for Sustainable Practice

This section discusses the application of reflexive governance practice across the Blackdale system in order to address the statement that sustainability is better served with more reflexive governance practices. The section will begin with an account of the different orders of reflexivity present within the system, as there is significant evidence of reflexivity already built into some areas. Indeed, some of the success of the development can be directly attributed to those reflexive practices but they are limited in scope and often corralled into specific parts of the system. This section explores the areas where reflexive practice has had an impact before moving on to discuss how it could have been more fully employed to make for a more effective and sustainable system. Reflexive governance exists in two orders that, in this chapter, can be roughly equated to sustainability as well (Voß et al. 2006) in that a single process alone is only sustainable if part of a sustainable system. The two concepts are definitely linked but not interchangeable. Reflexivity can be achieved without sustainability but it is the contention of the remainder of this chapter that true sustainability cannot be achieved without second order reflexivity.

First order reflexivity recognises a need and addresses it. In the case of Blackdale it can be described as ‘building for sustainability’ or performing a task in response to an awareness that sustainability needs to be factored into building practice. The second order of reflexivity, or in this case ‘governing for sustainability’, takes a more expansive perspective. Second order reflexivity takes the context in which any intervention is being made into account along with the possible paths it might take within the “full, messy, intermingled natural reality” (Voß et al. 2006 p5) of the dynamic system of practice. It strongly rejects the idea of linear, decision-based governance which holds governors to be outside the system they aim to govern. This connects well with the SPT contention that practices govern and thus that not only can any practice connection lead

to a desired outcome, but that any practices of governance are themselves part of the system of practice. The rest of this section will cover the orders of reflexivity through giving examples of where first order reflexivity appears in the system and then noting how second order reflexivity is excluded from it.

6.2.1 First Order Reflexivity in the Blackdale System

It could be argued that a system of practice could only ever be reflexive, and by extension, truly sustainable if it embraces second order reflexivity fully and applies it across the entire system. With that being said it would be unfair to entirely write off the Blackdale system for not fully embracing reflexive practice at all levels. There are important aspects of the system that we can learn from and, if expanded, could be tools to greatly increase the reflexivity and effectiveness of the system. To an extent they have been co-opted towards production of an unsustainable and unreflexive end, but to leave the argument there overlooks a chance to acknowledge and learn from positive aspects of this system of practice and where they could potentially lead. This will be explored further in section 6.3.

Each of these instances of reflexive practice is an exemplar of treating governing as a process of cumulative, ongoing knowledge production (Sendzimir et al. 2006; Spurling & McMeekin 2015). The first of these examples comes from a pair of government mandated interventions, Building Information Modelling (BIM) and Soft Landings (SL) that between them build on and inform existing processes of ongoing learning about and between developments past and future. The second is the focus of this system on maintaining relationships between practice. This example of reflexive practice is present throughout this system (and in fact any system) but it is specifically championed in this one as a means to ensure an improved outcome. The last example is an intervention being put in place by the University, based on information gathered from Blackdale and previous developments. It includes both the UEA Design Guide and Contractor Frameworks, which codify relationships between practitioners and assess them over time.

6.2.1.1 Ongoing Learning Projects

The following quote speaks to the importance of learning for effective governance.

"Reflexive governance is about enabling learning that occurs and avoids lock-in that could limit further learning. However, it will only happen when the actor is forced to in order to meet challenges."

Schön, in Voß et al. (2006 p92)

This idea is mirrored in the next quote which is in response to a question superficially about dealing with challenges.

"Understanding, number 1. Not necessarily 'why?' but it's a good place to start. Why is it going that way? What can we do about it? And if we can't do anything about it, what do we do about the fact that we can't do anything about it? [...] and learn, would be the last bit of that puzzle, don't just keep making the same mistakes, and let other people know you're learning."

Project Administrator 1:01:37

Much of what occurs within this project represents the informal learning that might happen in any other context, but is given particular credence in this development by being codified within the Building Information Modelling (BIM) and Soft Landings (SL) projects. The BIM process creates a digitally federated 3D working model of a building during the design phase that can be updated by and shared to all professionals involved.

"BIM is a new initiative in the construction industry; it was about 2010 [when] all government institutions [...] are obliged to [have] all their new buildings put on a BIM system. This is only going to BIM level 2. Which is a kind of intermediate stage because the whole industry hasn't really got a grasp of it."

Project Quantity Surveyor (Client) 6:45

“In advanced stages we might have to work out maintenance costs and have that built into the BIM model, but it wasn’t a requirement of this job.”

Project Quantity Surveyor (Client) 8:12

BIM currently exists on three levels, of which Level 1 is a standardised CAD design creating an archive that can be referred to later. Level 2 is the same process but performed in real time as the design develops, creating a federated digital model that can be interrogated by all parties with an option to ‘hang’ costing and sequencing data on particular parts of the digital environment. Level 3 is not mandated yet but is intended to produce one single collaborative model including construction sequencing, cost, projected lifecycle and potential for recycling (NBS 2017). Level 4 introduces concepts around improved social outcomes and wellbeing, but is only theoretical at this point.

BIM has been valuable in Blackdale; building on successes from Crome Court and in combination with the SL process, it represents the formal aspects of learning practice within the system. BIM and SL are often spoken of together, there is still work to be done as far as integrating them into the system for the next development as the following quote illustrates.

“There hasn’t been enough interaction between the BIM process and [Soft Landings]. I don’t know enough about the Soft Landings process and also I think the Soft Landings person doesn’t know what benefits the BIM process could bring. It’s kinda been delivered as two separate things, and it needs to be more integrated.”

BIM Manager 20:12

Where BIM represents collaboration in the consolidation of data, SL represents collaboration in its dissemination. SL links into the RIBA plan of works in that it begins with an initial meeting between the client, designers and potential contractors before a series of facilitated meetings during the design phase. During construction there is an effort to familiarise the management practitioners responsible for carrying the

management aspects of Practices of Habitation for Blackdale with the building in order to facilitate handover.

“I’ve been invited over two or three times, during the course of the installation, and also I’ve been very lucky to be involved in the commissioning and the witnessing. The contractor actually did lay on some training for the maintenance staff, key members of the maintenance staff, which included members of this team here.”

Building Management System (BMS) Manager 36:52

Where SL begins to come into its own, and why it is the eighth stage of RIBA’s seven stages, is that post-handover there begins a period of extended aftercare, where the construction practitioners maintain a presence on site for roughly six months during the ‘defects’ period. After this there is a one- to three-year extended aftercare where contact is maintained between the contractor and clients along with a six monthly process of evaluation and review.

“Once the building’s handed over, then it’s kinda testing and commissioning making sure that, once the building’s in occupation on a regular basis, surveys to make sure the users are happy with it and feedback etc. Just, you know, holding their hands about how to look after the building [...] for about a year after a building contract.”

Project Quantity Surveyor (Client) 48:37

The combined effect of all these site visits, tours and familiarisation is to ensure that the end-users’ practice has all elements required for its performance before it is performed in-situ, in order to lessen the gap between design intention and performance that so often plagues construction projects. This facilitated, formal learning process introduces an element of reflexivity into the system that might have been present before, but was not formally acknowledged and instead relied on particular practitioners to carry it forward both during the development and onwards to the next.

“[Soft Landings] shouldn’t, really, be necessary, because everybody should do it anyway, but it’s formalising the process. Site managers get too tied up in delivering the project, that’s what they care about. It’s sometimes taking a step back and taking another view on it, but yeah, it should happen on all big projects, but it doesn’t.”

SL Manager 7:03

This limits the use of either of these processes to within whichever institution they are taking place in at the time but, just as BIM has plans to expand its remit to include more socially and contextually generated data, SL may well in future expand to include a database of its output. The purpose of these two processes is to turn construction into a cumulative, reflexive learning experience for as many parties as possible and they are facilitated by, as well as being intrinsically linked to, the practices discussed in the next section.

6.2.1.2 Focus on Relationship Management

As a practice, relationship management is ubiquitous. It exists at several levels within the development and the wider temporal context. In some cases it refers to ‘man management’, the direct interfacing with subordinates by management practitioners. In other cases it refers to higher level action intended to, in effect, keep all parties happy and honest, in an environment that seeks to force them into conflict. This is achieved through constant communication, sometimes facilitated through SL and BIM or similar formal practice and sometimes more informal examples. A longer-term example is the vetting and curation of practitioner partnerships on an organisational scale intended to create a community of shared practices within the local area. Initially, these practice relationships are informal, formed from confluences in meanings between practitioners but become more solidified over time. The two quotes below highlight the duality of relationship management. The first quote refers to professional practitioners and the management of their relationship to project administration as well as the development itself.

“[I have] a working knowledge of the University, an understanding of how they sit within the wider context of Norwich, Greater Norwich area, Norfolk, East of England.”

Senior Planner 26:14

“[The planners]’re part of the team, and made to feel that way, and then they start to feel as if they have some ownership of the project, and its success, in the same way the rest of the team do. The project then looks very similar to them as to us, not have them as an outside body.”

Project Administrator 1:10:48

These two quotes give an indication as to the relationship between the two practitioners, that they are keen to interface in a mutually beneficial way. This relationship results in the ability to smooth the planning process, saving time by taking certain considerations on trust which is not always possible otherwise.

“We’ve got some trust, and it works. That’s quite tricky with private procurement because in theory, you’d pay a little bit more to get that and make sure it works, but it’s not cheapest.”

Head of Engineering 1:16:39

Well-managed relationships allow for a more relaxed professional environment and, ultimately, a greater push towards quality over absolute cost. Knowing that a more successful collaboration creates a greater likelihood of repeat business, practitioners intentionally maintain and strengthen the links between their practice over time.

“I need to work with the architect to deliver a financially viable scheme, but also, there’s a softer issue here. It’s that I don’t want to be associated with architects for producing cheap, nasty looking buildings. I want to help them design a really nice building that they’re proud of, because if I do that I’ve done my job successfully and that architect would like to work with us again.”

Project Quantity Surveyor (Client) 50:24

These close-knit relationships might be a local phenomenon but they do seem to generate positive working conditions and successful developments and so should probably be carried elsewhere. The final two quotes are a testament to the effective working relationship generated by the more relaxed and quality-focused environment.

“Well, you need to have the right people about you, for starters. From the main contractor all the way through. Everything follows sequences [...] it works, but a lot of times it don't. But you do get over things. Just the way the team works here, everyone works together. In London it's a different story.”

Mechanical Site Manager (Sub-contractor) 12:24

“Makes sure the job gets done and everyone enjoys the job and everyone reflects on the job. Saying that's the best job they've ever worked on which is brilliant to hear. Nobody wants to go, everybody wants Phase 2 so they can have the same thing again. So yes, deliver a good project which is one that everybody can reflect on.”

Assistant Site Manager 15:21

As the last quote suggests, a more friendly working environment allows more time for reflection on the nature of the work being undertaken as well as an easier flow of information between practitioners and by extension practices as they are linked together with a certain amount of trust. This not only makes a system less fractious but much easier to steer reflexively as with greater cohesion in projects comes a greater focus on the goal of the system or development.

6.2.1.3 Production of Framework and Design Guide

Having had some success with a more open and reflexive approach to recruiting and managing practice onsite as noted above, UEA Contractor Framework (Appendix 7) and UEA Design Guide represent attempts to codify the positive effects of those relationships. The Design Guide is a document detailing the requirements for new buildings built on the UEA campus. It details everything from performance requirements to standardisation of products to colour schemes. The Contractor Framework is a formalised scoring system for various companies and groups that the

University has interacted with to rate their performance against a number of different criteria. Those scoring highly are more likely to get contracts in the future. Both are updated periodically to keep them focused and engaged with the latest technology and best practice.

Design Guide

The UEA Design Guide is a document specifying the University's requirements for any new developments or refurbishments. Part of its purpose is to minimise risks to the design inherent in the D&B process as well as possible conflicts between regulations and design. This is achieved by binding all elements into one set of requirements ahead of the tendering process which fosters stakeholder engagement at the very earliest stages of development. The Guide incorporates two forms of governance from the University. It is a top-down intervention at the outset setting a pathway for the development but also includes a more reflexive monitoring process to better coordinate between projects facilitated by a particular client side practitioner.

“We don't just, kind of, throw the Design Guide into the consultant team. We have an engineer from the client side [...] who facilitates the embedding of the Design Guide at a project level. They sit on the Design Team and there's checks and measures put in place by them to make sure the Design Guide is used.”

Head of SUE 19:36

Indeed its purpose is largely to bed environmental sustainability into UEA's development process, without ever mentioning it explicitly. This is one of a number of points where environmental sustainability is injected in with the explicit goal of enhancing economic sustainability and cost efficiency but with the tacit meanings involved being clearly environmental in nature.

“What I will say, is that, quite silently written into the Design Guide, in the fine detail is 'sustainability' throughout. Sustainability can be achieved in many ways. I would call the Design Guide [a] 'silent sustainability campaign'.”

Head of SUE 11:39

The creation of the Design Guide represents visioning ahead to new projects based on learning from previous one. It is an intervention in design and construction practice and a feedback mechanism taking data from Blackdale to inform the next development on the campus and is an excellent example of the value of reflexive practice.

Contractor Framework

Keeping positive relationships between interactions as well as during them is valuable and that is recognised by the University through the recently produced Contractor Framework. The Framework generates and stores data to empirically rank connected practitioners by utility of practice to ensure that positive interactions are continued and repeated. In practical terms the Framework is a league table with a series of key performance indicators for previous work that can be used to decide which practitioners best suit the University's aims and needs for a coming development. While the Design Guide curates the artefacts and recruits practices, the Contractor Framework curates meanings and skills. The Framework also represents an understanding on behalf of the client that positive interaction will be rewarded and a focus on honest relationships may foster more interactions in the future.

Relationship management is, as noted, a ubiquitous part of any organised practice and this just happens to be an excellent example of it being performed effectively in a standardised way. It facilitates ongoing learning and ensures continuity between projects as well as harmonious and smooth progression of planning, construction and hand-over. It is not a governing practice in that it steers in a particular direction but it does a great deal to reinforce the pathways through which practices and projects progress in time.

6.2.2 Second Order reflexivity in the Blackdale System

These three examples, while positive steps towards a more reflexive system, are relatively isolated and less able to affect the wider system than perhaps would be desirable. It seems to be acknowledged that these are worthy forms of practice for further pursuit but that they currently operate within 'silos', limiting their effectiveness. Highlighting this problem are a number of breaks in what would otherwise be cycles of governance and feedback proposed in the initial conceptual framework. If knowledge

transfer is severed or ignored a practice cannot learn through time. This has repercussions for governance, if it we take governance to be a practice of continuous learning and adjustment, as Voß et al. (2006) suggest.

The first of these breaks is the unclear relationship between the lived experience of residents and the Student Experience, which exists as an emergent, related, but separate entity. However, it should be noted that there is another governing relationship that lends a great deal more scope to the ability to govern the Blackdale buildings post-occupation and that is the management project responsible for maintenance, cleaning, security etc. The management project has many links to the rest of the system and could be said to be just as validly occupying that building as they are connected perennially to it rather than being carried by a new cohort of practitioners each year who bring with them their own variations in practice.

The second of these breaks comes between SL/BIM and the government agencies responsible for their existence and monitoring. This relationship is discussed below:

“BSRIA set all the guidelines saying ‘You should be doing this, you should be doing that’ but there’s no method for reporting. No one’s feeding information back to a central source to start building this benchmark data. It’s all held locally within the UEA. There should be a central repository.”

SL Manager 15:56

While the lack of capacity for learning from what is clearly a knowledge dissemination exercise is evidently a flaw, that there is the capacity there for learning at a more systemic level provides some hope. Similarly, the BIM process does not currently require the lifecycle-based information and systemic links to local planning but that it at least theoretically possess that functionality suggests the capacity to expand its utility further. In fact, the ability to ‘hang’ data onto physical objects within a virtual environment has great potential for recording information not just about physical properties but the effects such artefacts had on practice while in use. This technology could be very useful for prompting a more practice-based understanding of construction that combines the physical with the social, but this is a long way off as yet.

Another example of second order failure can be found in the findings of Chapter five, specifically section 5.2.2, in which it is discussed that the Project Board meeting is not so much an instigating act in its own right but a nexus between past and future practices that act through it. It might be unfair to say that the carriers of this meeting practice are not cognisant of the past and futures they are entangled with, but the decision being made reflects only a first order of reflexivity. The quote below suggests that one must and can only use a relatively limited view of reality in order to believe that one is making a decision at all:

“The trick is simple: to decide and act rationally, one needs to isolate discrete dimensions of complex reality, that is, to select relevant elements, express cause and effect in linear form, establish the priority of goals and assign responsibilities.”

(Voß et al. 2006 p5)

The inability to question the basic premise of the discussion, that more students were needed to generate more income, means that the outcome of the meeting is only going to possess a relatively narrow view of sustainability. This view is anchored in the economic definition and a more operational view of sustainability, meaning it is to be achieved through efficiencies in the current system while the system itself – in this case the campus – expands. This is a perfect expression of the techno-optimistic viewpoint being taken as the basis of this system of practice, which then leaves out the social aspects of sustainability but also everyday life more generally.

There are many examples of sustainable features built into the Blackdale development alongside the technical efficiency efforts being made on a campus level to address the need to save both money and carbon output. All through the system there is evidence of this, and as a result buildings have a much lower environmental impact than they could have had under other circumstances. Blackdale was designed with Solar PV, CLT construction, efficient air and water delivery systems and optimised insulation, all of which lower its energy use and carbon output. The combined effect of these

interventions is reflected in both a year-on-year drop in the UEA's per capita carbon footprint and the following quote:

“[Blackdale]’s going to have a major impact on our ability to reduce our energy consumption in absolute terms.”

Head of Energy and Utilities 24:58

This decision to begin the development sets in motion a particular pathway. This means that any attempt at reflexivity or sustainable intervention from that point on is essentially just ‘making the best of a bad idea’ and this continues all the way through the system. The next case, the Design, features a great many professional practices bound together by the practice of a group managers and administrators whose role is ostensibly to steer the development but mainly consists of facilitating communication between various professional siloes.

“I think the biggest thing I notice as a project manager [...] all these people, to a degree, sit in silos. They go off to their office, they do their job, they get on with it... whereas, we can't, and we have to communicate with all these people on a regular basis.”

Project Manager 22:18

In one sense, this specialisation of labour allows a system to operate efficiently and even in an SPT model the binding of professional practices into a project with which to achieve a stated goal makes sense. However, Voß et al. (2006) warn that there are dangers inherent in specialisation; in fact that to possess the mind-set of a specialist requires ignorance of externalities, side effects and repercussions. These are referred to as second order problems, meaning that professionalisation of any practice makes anything it then achieves a first order response by definition. This stands to reason: a professional hired to fulfil a role who then, taking a more holistic view on the project, deems that sustainability would be better served by that project instead not going forward would, at the very least, be considered ‘unprofessional’ and more than likely shortly unemployed. This is a problem but by no means an insurmountable one as the very existence of relationship management and learning practices allows those siloed

practices to be folded into a more reflexive system, either by themselves being included in reflexive practice or management practices acting as agents on their behalf to ensure their involvement.

Having progressed in a linear fashion through the first two cases and into the third, the buildings themselves represent significant path-dependency. Barring major upheaval, having been built the system of practice around them is then locked into an accepted 60-year lifespan. A certain amount of lock-in is inevitable when creating a physical space but all the more so with a system that has not been especially reflexive thus far, and as such does not possess an inbuilt capacity to change with circumstances. This relatively narrow understanding both informs the Student Experience and to an extent causes its separation from the lived experience of residents. Because there is no real thought put into reflexive planning past a year or two of occupation, the assumed nature of residents' practice is going to remain static from that point on.

This section analysed the board meeting, design and influences on cooking practice in terms of reflexive practice and found it to be relatively limited if one takes the view that only second order reflexivity is truly reflexive. This finding risks selling short some of the positive developments that are to be found within the Blackdale system which form a strong potential foundation that could, if acknowledged and given room to flourish, give rise to a much greater degree of reflexive governing practice within the system.

Moving on from this and having accepted that only second order reflexivity truly represents a reflexive governance approach to sustainability, the question is then, 'how does one build a reflexive system?' To an extent, the lack of second order reflexivity is a requirement of the functioning of this system of practice. Beginning right at initiation with a lack of consideration as to how additional revenue could be generated without locking in significant additional resource use, the entire system is arguably predicated on a lack of second order reflexivity. Having discussed some of the problems, and pointed out that there are areas worth cultivating further, the question becomes what does a reflexively governed sustainable system of practice look like and what does it do?

6.3 Reflexive Systems of Practice for Sustainability

It has been shown that there are seeds of reflexive practice within the Blackdale system but that the system itself is not reflexive and that a fundamental change is needed to achieve such a goal. There is a recognised value for reflexive practice and evidence of its implementation but only in certain areas and for a system to be considered reflexive, systemic, second order reflexivity needs to be embedded throughout. This section sets out some core principles that could embed second order reflexivity, and with it meaningful sustainability across systems of practice. It is not the recommendation of this work that these should be applied to the Blackdale system in isolation but it provides a useful starting point from which to suggest means through which reflexive governance could be achieved.

Beginning from first principles, that practices govern and are arranged into systems of practice, there is no alternative but to acknowledge the incongruity of exogenous governance (Rip 2006, Smith & Stirling 2007). The governor, be it a practice, an artefact or a practitioner, is as much a part of the system of practices as any other, and is thus subject to it. Keeping with the theme of first principles, the conceptual framework for this thesis treats governing practices as a constant cycle of visioning, intervention, monitoring and feedback. This is reflexive governance, treating governing as a process of learning and data gathering (Sendzimir et al. 2006, Hargreaves et al. 2013) rather than command. The only thing to add to this from a systems of practice approach might be that governance cannot just be a case of Practices of Governance monitoring themselves and their outputs, but being cognisant of other practices that might also govern without possessing the intention to do so. Voß et al. (2006) argues that those governing should be involved in the systematic and interactive anticipation of indirect effects, which in this case maps well onto the idea that practices govern.

In order to realise this new paradigm within the system that currently exists, without lengthy re-education in the theoretical underpinnings of SPT and reflexive governance, the following section introduces three core ideas that need to be implemented, or at least radically expanded from the first order niches they currently occupy.

6.3.1 Practice Mapping

This section will explore some of the issues around the mapping of practices and systems of practice. With the axiom of any given practice being equally valid as a source of governance in a flat plane comes the necessity for a different method of visualising that reality in order to effectively map it. This is the task that has been undertaken as part of this thesis and was described in Chapter three (3.3). Beyond this, the task becomes linking together constellations of systems of practice (Macrorie 2016). There were a number of points on the Blackdale system map where whole systems of practice were noted to exist and connect with Blackdale, but there was no scope to interrogate them and so in this sense they exist only as far as they interact with Blackdale (5.4.2). If practices govern one another within systems, then systems of practice govern one another between themselves. This means that there would have to be a model that could register everything from potentially important elements of practices to the linkages between concurrent and consecutive systems of practice, forming constellations.

Of particular value in this endeavour are the examples of BIM and SL, which possess the capacity to link systems together as well as provide cohesion and an element of reflexivity within systems. BIM was used to carry insight from Crome Court through into Blackdale, as well as the potential for the model to be used to gather data on elements of the building that might be re-used or refurbished after their expected lifespan has run out in the 'Urban Mine'. If the BIM system could be fully integrated or perhaps automated it could be used to create a full scale, real-time model of not only designed artefacts but those same buildings in use.

“There are some opportunities that remain to be explored around BIM, and a really good one is that [...] in your BIM model you [can] highlight all of the materials that can be recycled when the building is decommissioned and demolished. I came across this phrase, which is the 'Urban Mine'.”
Head of SUE 16:55

Soft Landings is more of an example of cohesive practice within Blackdale that connects very early planning and design with construction and finally end-use, but there is untapped potential to use it to enhance reflexivity. There is a potential to report back to BSRIA and create a benchmark and disseminate elements generated here across constellations of systems to benefit from the progress made in other systems. Furthermore, the addition of a separate party attached at various points to virtually all of the major areas of practice in the system has potential to use that slightly abstracted position to generate more reflexive insights and feed them back into the system. Both BIM and SL had positive effects on Blackdale and could have real value in being able to map systems of practice in the future.

It should not go unremarked that the Blackdale development was completed before the first map of its practices was finished. The time taken to produce the maps in this thesis, as the labour of an individual, could be taken to suggest that the process was prohibitively time consuming. It also means that a map is produced from the privileged position of knowing the 'end', or in other words being able to effectively bound the practices involved in time. To be useful as anything more than an *ex post facto* reference, this process needs to be happening more or less in real time. The ability to rapidly understand the landscape and predict from there, while perhaps not absolutely vital, would be a huge advantage to a reflexive system.

The methodology of the fieldwork is perhaps analogous to early explorers setting out with blank sheets to make maps as they went. This is only a problem because Blackdale is a paradigmatic case study (Flyvbjerg 2006). It was not just a mapping exercise being undertaken, but one of understanding how to map. Now that there is a benchmark for the system, at least in this location, any further work could build on it rather than starting from a blank slate, as Strengers (2018) warns. In addition, there are other examples to draw from. Higginson et al. (2015) made some headway into mapping practices but, while academically novel and useful as a tool for the study of practices, the resulting maps were too granular to intelligible if scaled up to the level of systems.

The dataset and corresponding map of the Blackdale system, while potentially containing detailed information down to practices or elements, required structuration.

In order to operationalise this method, all parties must be able to visualise or at least conceptualise the whole system and their place within it. The answer may lie in simply requiring all parties to perform a standardised version of the same ego mapping process that took place in Phase one of the field work (3.3.1), meaning that information is being input into the system constantly from all parts of it rather than just one viewpoint. The Shovian (Shove & Pantzar 2005) model is good for this because it is so simple, and information input into a model based on it would be comparatively easy even for those unfamiliar with SPT. The need for simplicity, multiplicity of input and expansion beyond an individual viewpoint is not only practical but required by a transition to systemic reflexive governance.

6.3.2 Anticipatory Visioning

Once a map exists then it becomes time to plan a route. With so much potential knowledge and with governing practices focused on learning, there is a great deal more scope for anticipation and visioning than was present in this case study. Maller and Strengers (2014) note that previous examples of practices can be used to inform or intervene in future practice. With a detailed and dynamic model of current and past practices, predicting what might occur in the future becomes increasingly intuitive as more information on the effects of previous interventions and interactions between practice become known. Once governing practices are grounded, situated and cognisant of potential outcomes and pitfalls, Practices of Governance can begin to reflect the systems they exist within more closely and steer more effectively.

It is unlikely that this process will be seamless and there are a number of points of potential conflict risking institutional buy-in (Späth et al. 2006). The current understandings of sustainability being employed across the system are those of a more technocratic system where a more humble approach to governing would lead to greater reflexivity. That governors are not only required to 'get down in the mud' but to acknowledge that they were always there, is likely to induce resistance. Anticipation might entail looking at Blackdale, or even more pointedly the true sustainability exemplars of Crome Court and the Enterprise Centre and asking 'Is this a sustainable system?' before necessarily broadening that question to the wider system of the whole University. In terms of keeping the campus solvent and operational, these recent

developments greatly aid sustainability but in terms of absolute resource use, energy demand, carbon output as well as the air miles involved in renting half of the rooms to non-home students this system is not sustainable.

In terms of the UEA's visioning practice, the 'Target 2020' energy and carbon management plan (Darsley 2015) and 2030 Vision (UEAb 2015) are still operating within a growth oriented paradigm while the proposed 2050 sustainability vision is back-casting from some more radical concepts around what a sustainable campus has to be. If the planning out to 2030 is first order and the back cast from 2050 is, optimistically, second order there is likely to be a serious issue of path dependency and locked-in resources (Rip 2006) which, even optimistically, is going to hamper the effective implementation of the 2050 vision. If it is acknowledged that there is a limited window to avoid this path-dependant state then there is a distinct possibility of having made two incompatible anticipatory visions. The very act of producing that conflict might open up space for a second order-based challenge to the current paradigm within that window.

Even the assertion that there will only be one future for the campus, which is decided by these processes is fundamental to the current governance paradigm as suggested by Voß (2006 p5). Strengers (2018) notes that not only are systems of practice dynamic, but that very dynamism constantly produces a multiplicity of potential futures. Understanding this necessitates embedding anticipatory visioning across the system of practice and not just within the traditionally governing structures. In addition, it is a process that would require constant feedback from all points of the system and require projects similar in scope and function to Soft Landings to administer the transfer of information. Similarly to mapping, this would be a mountainous task for any individual part of the system to undertake, requiring a collective effort across the system to provide, organise and react to new possibilities. The following section contains suggestion on how co-design might aid the system in its actualisation.

6.3.3 Co-design

Co-design is instantiated within this system as a process of stakeholder consultation. This took place during the very early stages of the development in order to assess and react to needs within the system in terms of specifications for the new build. This is good practice, taking into account the needs of practitioners (Kuijer 2017) rather than simply designing for an assumed set of proto-practices. It is however still an example of first order reflexivity rather than second order. An example of this can be found in section 6.1.4 where the University presents the Students Union with a series of costs for a new development rather than asking the students what they might actually want from a living space, which might not include the kind of high specifications that are easier to market to parents. Co-design is a well understand aspect of practice, particularly within design as shown by movement towards BIM etc. It needs to be expanded dramatically in scope and ambition to form a truly reflexive system.

The ideal scenario is the co-design of an evolving system of practice rather than the co-design of a discrete artefact within that system. While this might seem like a simple case of scaling up, in practice it means a reorientation of the system with all parts of it becoming interlinked. There is a possibility that, inquiring from a second order perspective as to the most sustainable outcome, the response from practitioners might be 'Don't build'; at this point the Blackdale system effectively ceases to exist. As noted in section 6.2, this system is predicated on the fact that it only possesses first order reflexivity to begin with. This is why accountability and the honest, distributed, interrogation of possible futures is vital.

As in the case of mapping and anticipation, this kind of 'systemic honesty' is much easier to achieve collectively with all parties contributing than with single parties being expected to form a judgement from a limited 'external' viewpoint. It is almost a truism to say that every worker in every job assumes that they know their job better than their manager. The fact that this, often derided, view enjoys such ubiquity is worthy of notice. This is not to suggest that management as a practice lacks utility; far from it. Certainly, in a world comprised of practices and carriers of practice the manager and the practitioner are simply performing two different practices to two different ends, with both having something valid to contribute to the system.

It is worth noting that in this scenario neither practitioner nor manager particularly requires or benefits from a hierarchy in order to perform their part of the system. The idea of hierarchy also suggests that a given practitioner's input into the system is less valid than another's. While Watson (2017) comments on the need to place power within practice and a systems of practice approach, by encompassing power structures, forces an engagement with power. Thus far the most compatible conception of power with this systems approach would seem to come from Latour (2005) and the notion that power is in effect generated through connections between practice with the most connected practices being constituting "power centres" (Schatzki 2015). It is not the place or the intention of this thesis, to take a position on the position of power within SPT. Even using the Schatzki (2011) definition is outside the scope of this work as it is empirically difficult to determine relative power levels based on connections since there has not been a sufficient interrogation of practice connections emanating more generally from Practices of Governance. It is enough, at this point, to say that a co-designed system would have to be predicated on "equal" input from all points.

The sourcing of information from all points of the system equally also vastly accelerates the mapping process, as noted in section 6.3.2. Each practitioner understands the details and performance of their practices far better and in far more depth than any agent trying to map the system from outside could hope to. Similarly to this, if the entire system is cognisant of its ability to predict and guide then it becomes much more effective at anticipating futures and potential path dependencies.

This form of co-design also eliminates issues of managers dictating instructions to practitioners who know that the task they are about to perform could have implications that a manager, not acquainted with the intricacies of that task, might simply be unaware of, but due to the power dynamic in play may not be able to refuse or suggest an alternative. The ability of a practice-based understanding to transcend social structures is something that Watson (2012) notes and, along with insights from Kuijer & De Jong (2011) around using an SPT understanding to eliminate rebound effects and account for possible future effects, provides academic support for what is a well-known but anecdotal issue within governance systems currently.

The three principles of mapping, co-design and anticipation should, if implemented, result in a system of distributed reflexivity. Such a system would be much better positioned to react to sustainability issues, with true second order reflexivity rather than first order. Such a system is an ideal to strive for. It would be difficult to implement currently and effectively cannot exist in isolation as this simply pushes issues of path dependency up a power gradient without ever resolving them. Regardless, distributed reflexivity remains a worthy goal and is therefore explored below.

6.3.4 Distributed Reflexivity

In a scenario of distributed reflexivity, all parts of the system are cognisant of each other and working continuously to anticipate the future outcomes of not only their practice but of other parts of the system. Second order reflexivity has a major advantage over first order here. A compartmentalised system, even one performing reflexively in parts, is likely to become fractious and engender conflict as separate areas lack a common goal, or even definition of a goal. A system of distributed second order reflexivity would by necessity have all parts of that system be aware of the overarching function of that system and their place within it alongside the other practices. Technologies like BIM and the UEA Building Management System (BMS) have the potential to create systems like this with all sectors able to draw, in real time on a persistent, shared data source that can inform practice. This kind of federated knowledge base would go a long way towards eliminating the issue of siloed professional practices noted in section 6.2.2, because it allows them to interact through a collectively recognised digital space.

In the specific context of Blackdale such a system could have a marked effect on reducing the gap between the student experience and the Student Experience. For a start, the simple act of mapping the Blackdale system has highlighted that the disconnect exists. A more focused mapping process might be able to quantify the differences between expected and reported practice. A co-designed map, either using a methodology similar to this one or some form of longitudinal digital reporting to fully account for the practices as they might change and evolve could provide actionable near-real time data to the University. Conversely, assuming distributed reflexivity is in full effect residents would have access to information about the Practices of Habituation and Governance being enacted around them, allowing them to interact if needed.

Finally, an anticipatory approach would force the University to consider the effects of all its practices on those of residents. In the case of the definitions of sustainability (6.1) that might include recruitment practices around attracting large numbers of students from other countries with no restriction on air travel, or changing the weighting for specification of new builds against being able to lower fees and attract students from a more local area. Regardless of the actual effect this approach would involve the University taking a much broader view of its effects on student practice as well as providing more granularity in terms of data. That closer relationship has the dual effect of making students more a part of the University and UEA having a much better grasp of what its student experience is actually is and thus what its Student Experience should be.

Another positive of a consistent and communal knowledge source is that it eliminates or at least reduces the impact of one of the likely sticking points of implementing a system like this: power. The information gathering aspect of reflexive practice is relatively easy to achieve down a power gradient, i.e. management asking staff to report on their practice, but much more difficult to apply up one since employees cannot, as easily, demand details of their superior's practice. This is partly why reflexive practice gets siloed in pockets of first order reflexivity throughout the system in the first place. A given practitioner can address a problem in a reflexive manner, by visioning ahead and learning as the design emerges, but if the same level of reflexivity is not happening "above" then the use is limited.

Ironically, reflexivity is inversely proportional to power, as seen in the cases in Chapter five. Those at the top of the gradient had power to enact but were limited on their ability to reflect on what that meant, whereas increasingly those further down were cognisant of why they were being asked to perform their practice and understood what that meant but had no power to challenge what they were being asked to do. The scope for either refusing or implying that whoever is giving an instruction 'should go away and reflect on their decision a little longer' is extremely limited. This kind of truly reflexive system can be greatly assisted by the use of a flat ontology which simplifies the units of observation and their connections. As Rip (2006) suggests, the answer lies in not just encouraging sustainability but in flattening the current regime and making

governors understand that they are practitioners in the same way as any other practitioner in the system. Indeed, the idea that requesting a greater degree of reflexivity is a challenge to power, and the conflict that might entail, simply goes away when that reflexivity is distributed in practice throughout the system.

The elements of this distributed system are present within Blackdale, as seen in section 6.2.1. They need expansion to produce the second order reflexivity needed, or rather redefining as an intrinsic part of the system rather than simply useful or interesting tools within it. By and large professionals, when questioned, understand the need for second order reflexivity but often do not perform it within their practice. When asked “Is this a sustainable building?” the answer was almost universally “No”. This is not by any means because it is a poor example of sustainable practice in construction, but because a reflexively sustainable system would most likely not have produced it and the practitioners involved, by and large, understand that.

Similarly, many of the professionals and indeed governors involved talk about environmental sustainability in the same terms. It is noted as an abstract thing they would like to do, or almost have forced upon them, but that does not fit into their everyday practice unless it is explicitly part of their job or something they bring themselves. They are stuck and limited to a particular timespace, able to meaningfully enact only limited reflexivity by the current governance paradigm. That elements of the system are capable of reflecting upon it is positive and this is evidence of reflexivity beyond the codified learning practices through which the system reflects upon itself. However, these are still isolated examples, and for the system to be meaningfully reflexive that reflexivity needs to be distributed.

In terms of implementation there is a slight risk that this type of practice-based system could be seen by those adopting it as de-humanising. Indeed, late-capitalism and increasing automation of systems throughout society leaves such an idea open to abuse by organisations, with individuals being viewed solely as interchangeable agents carrying a given practice. In practice however, not only does a more reflexive system provide more scope for practitioners from all points of a system to assert and demonstrate their value to it but it provides a perhaps more accurate map of the

organisation as it actually exists. Rather than a more actor-centric model that produces a map of job descriptions, this approach defines all parts of the system as what is actually happening within them in close to real time. It also perhaps goes some way towards eliminating conflicts derived from inter-departmental, inter-organisational, or even international politics derived from different cognitive, cultural and institutional contexts of actors from different domains (Loibl 2006). Each performance being defined by its connections to the whole leaves less room for individuals to factionalise around a particular part of that system. How a practitioner mentally situates themselves and their role within a system need not be a cause for conflict if starting from the initial principle that any system is defined and created from connections between practice that already exist.

This type of system seems to represent a challenge to the current paradigm and indeed, academically, it does. Certainly it inspires the obvious question: if this is a distributed system, who builds it? The fact is that implementation of distributed reflexivity is made less arduous by the mutually supportive nature of its three core principles. Practically, visioning requires mapping, which requires co-design to be done effectively, which makes the move towards reflexivity more intuitive. That the mapping process, when being performed by only one part of the system, takes so long is a good example of this progression.

To be effective on a useable timescale, the map must be co-designed. A dynamic map implies a certain amount of predictive capability through trend recognition which in turn requires co-design to be able to re-map in response to likely changes. This mutually participatory approach has been suggested before by Chilvers and Kearnes (2015) and been received positively (Groves 2017, Routledge 2018). Chilvers and Kearnes' approach was based on Actor Network Theory (ANT) rather than SPT, which makes it more immediately applicable to current governing structures but limits its use for this work as it is not concerned with systems of practice as such. That the embracing of any one of the core principles at scale, leads inevitably to a requirement for the others, all of which are practices that currently exist, suggests that this system of distributed reflexive practice, while perhaps radical, is entirely possible.

At this point it is easy to obfuscate, saying that distributed reflexivity is an ideal, but the point of this kind of system is that every part of it is enacting itself at the same time. Correspondingly, all parts must communicate with each other. The simplest way to begin with the transition to such a system would be to embed the following three questions into every practice within the system.

1. What practices are involved with this performance?
2. What are the possible outcomes of this performance?
3. How does this performance connect to the rest of the system?

These are very similar to the questions that were asked of the principle actors during the early stages of the mapping exercise for this thesis. Addressed collectively, by an entire system, those simple questions could go a long way to producing a system of distributed reflexive governance.

6.4 Conclusion

The research question being addressed in this chapter is:

“What are the implications for reflexively governing systems of practice for sustainability?”

To answer the question the chapter began with an interrogation of what sustainability means and how that can be variable, followed by a discussion of what reflexive governance practice means for sustainability. The final section addressed what reflexive governance for sustainability might look like at the level of systems of practice.

It was found that different definitions of sustainability persist at different points of a system of practice and are part of different instances of governance within the system. Specifically, while the initial decision to build and the design process shared some aspects of their understandings of sustainability, the final case, that of everyday life within the residences had a quite different understanding of what sustainability meant within it. Different understandings of sustainability govern in their own right and to

their own ends, with the need for economic growth and operational financing of the campus often overriding the need for environmental sustainability. This also led to sustainable practice or interventions to be couched in language of efficiency rather than avoiding environmental degradation.

In practical terms, reflexivity has been useful as an addition to the processes of governing this system. In terms of stated outcomes for the development, in its own terms it has been a huge success. The development was completed on time, on budget and with its initially stated sustainability credentials achieved. It cannot be ignored, however, that a well-executed task possessed of the intention towards sustainability and performed with a degree of reflectivity is still not sustainable if it is being performed as part of an unsustainable system. Indeed this system owes its existence to the side-lining of strictly environmental concerns in order to prioritise operational sustainability.

Progress has been made to embed a degree of reflexivity as showcased in section 6.2 but the building and the system around it manage to be both possessed of strong examples of reflexive practice and still fall short of being either sustainable or reflexive at a systemic level. There needs to be a significant change in how the system governs itself; some of the tools that could be used to facilitate that process are already in place and just need developing, specifically, the BIM process, Soft Landings and the UEA Design Guide and Contractor Framework. It should be noted that just because reflexivity is useful and adds to the effectiveness of governing practice, it by no means ensures a sustainable outcome. It only did in this case because this was a desirable outcome for the system.

In order to enhance efforts towards sustainability with the University there needs to be an expansion of second order reflexivity, not just within parts of the system but across the entire system and into any adjoining systems. If we are to enhance the role of environmental sustainability then it needs to be more effectively spread across practice, not just in given systems of practice but into connected systems too. Without this there is no possibility of a genuinely sustainable system of practice. That there are examples of first order reflexivity in practice and an awareness of second order reflexivity,

particularly in terms of sustainability, suggests that a transition to a reflexive system of practice could be achieved without drastic upheaval.

At the beginning of the thesis it was asserted that there is a crisis of governance. Current considerations of what it is to govern are stuck in the technological, ecological modernisation narrative that tacitly drives an economic understanding of sustainability before an environmental one. Thinking about governance in terms of reflexivity and practices suggests that we still do not fully understand what it is to govern in this context. If the aim is to govern practice, it has to be done humbly and with the understanding that governors are practitioners too. Having reached that point, those systems of practice need to share a second order understanding of sustainability in order to unite behind it as a goal to be achieved.

Chapter 7: Towards Reflexive Governance of Systems

At the outset of this thesis it was stated that humanity stands in peril, facing, among other things, a crisis of governance whereby the conceptualised role and actions of governors are misaligned with the systems they govern. As the final chapter of this thesis, this conclusion provides an account of what has been done herein to tackle that crisis. It begins with a summary of the previous chapters before moving on to answer the research questions developed in Chapter three, then drawing together the novelty and contribution generated by the previous chapters. The final section, based partly on section 6.3, makes some recommendations for what could be done about governance of systems of practice going forward based on the analysis. All the while the novelty of what has been achieved in these pages will be brought out and reflected on.

The introduction lays out the pressing need for a new approach to tackle the multitudinous critical issues facing humanity. Beginning with the understanding that we have had the requisite knowledge and technology for some time, the suggestion is that this is not enough. This is referred to as a crisis of governance: the inability to fully apply to solutions available. The contention of this thesis is that the issue is not so much that current approaches to governance are insufficient but that they do not fully comprehend the social context that they exist within and thus cannot hope to steer it effectively.

The literature review chapter follows on from here with the suggestion of a new theoretical approach. Social Practice Theory offers another view on social life that eliminates many of the potential pitfalls of the current techno/behavioural paradigm. The chapter goes on to explain that two areas that Social Practice Theory (SPT) has not addressed in great detail yet are that of the formation of large social structures and that of governance of practices. Having established that research gap it introduces a novel conceptual framework to address these gaps formed from a combination of SPT with reflexive governance theory.

Because systems of practice have never been observed or tested empirically, a new methodological approach was needed. The fieldwork took the form of a paradigmatic case study, serving as proof of concept for the systems of practice approach. The aim was to define, explore and map a system of practice as it evolved. This was achieved using a combination of interviews and on-site observations, supplemented by documentary evidence. Finally, a novel mapping approach informed by the conceptual framework produced in Chapter two was used as a foundation for a map of the Blackdale system of practice.

Chapter four described the system of practice around the Blackdale development at the University of East Anglia. The chapter goes on to identify the key elements of the system map and describe how particular groups of practice govern others within the system. It concludes by stating that, at a systemic level, practices govern through the creation and curating of timespaces. These are then inhabited by practices whose organisation and elemental makeup is defined by the timespace they inhabit. In the case of Blackdale, this entailed Practices of Governance forming a timespace based on legal frameworks and specifications that curate the timespace occupied by the Practices of Construction, whose role it is to create a physical space for Practices of Habitation to eventually occupy. This analysis goes some way towards linking theories around systems of practice to the empirical work.

Chapter five explored governance within the system of practice in greater detail. Taking three instances of governance, each showcasing a different, critical point within the system and different types of governance were selected. Each one was examined using a vignette to offer an insight into the selected moments of governance before performing a more thorough description and analysis of the governing practices being performed. The first vignette presented the initial inception of the development and presented a challenge to pre-conceptions of current modes of command and control style governance by presenting the meeting as, in practice terms, a nexus within the system but itself subject to, and shaped by governing forces existing previously. The second vignette followed the design process and observed governance as a process of recruiting and reflexively binding practices together towards a given goal. The final vignette followed the impacts of governance interventions in the practices of everyday

life through the eyes of residents while then analysing the effect of those same practices on the evolution of university policy. The three cases formed a narrative that ran through the system of practice from inception, to completion, and feeding back into university policy.

The final empirical chapter sought to position sustainability within the system, identifying several different instantiations of sustainability variously present in the three cases identified in Chapter five. It discussed the different strands of sustainability and the need to govern, cognisant of its disparate nature, in a more reflexive manner. The second and third section of the chapter highlighted examples of reflexive practice present within the system and proposed a model for integrating a system of distributed reflexivity into systems of practice for the purposes of enhancing sustainability for the first time.

7.1 Answering the Research Questions

This section will answer the research questions posed in Chapter two. Each of these questions represents an aspect of the conceptual framework as applied to a 'live' system of practice in situ.

1. How can systems of practice be mapped out?

This question encapsulates both the practical and the theoretical and as such draws primarily on Chapters three and four to provide an answer. Chapter three provides the methodological answer in terms of the process through which the system was interrogated and mapped. Chapter four describes the nature of the map itself as well as its organisational structure.

The Blackdale system was mapped around a central artefact, in this case the finished buildings. Having identified a starting point, the next thing to do was to bound the system so as to find the edges of the 'area' to be mapped. This was achieved through identifying key practitioners within the system early on in order to gain a strategic overview of the system of practice as well as a basic structure and timeline. This process led to an understanding of the system as being comprised of specific groups of

practitioners, each responsible for particular goals. While this initial work was vital for developing a grounding in the subject matter more work was needed in order to turn an actor network into a system of practices.

In order to produce a system of practice a much more in-depth approach was applied both in the form of large number of interviews as well as on-site observations. The purpose of these was to understand what practices were present within the system rather than simply which actors. The data generated was analysed and formed into a map, which itself evolved over the course of the fieldwork but after several iterations was refined into the system map presented in Chapter four and Appendix 1.

The Blackdale system of practice map was informed by the conceptual framework presented in Section 2.4. The conceptual framework provided the basic elements of the map including the groupings of practices, and the reflexive cycle of interventions and feedback. These were combined with empirical data in order to populate and form the system. Systems of practice are primarily comprised of large groups of practices ordered into projects based on particular functions. These projects were then arranged broadly into key themes within the system as well as three main groups of practice representing both their location within the system and their place within the initial conceptual framework. Practices of Governance (4.1) rather speak for themselves as the controlling forces within the system, either derived from local or national government or more directly from within UEA. The Practices of Construction (4.2), here representing the governing practices of the conceptual framework, were both governed by the Practices of Governance and exert a significant influence over the subsequent Practices of Habitation. The final group, the Practices of Habitation (4.3), might seem like simply an outcome of the rest of the system but in fact themselves possessed the capability to, in performance, govern much of what went on elsewhere in the system. This governance took the form of data production to aid management and learning practices or the conversion of the practices of residents into the Student Experience that exerted such a strong influence on the University's strategic management (5.2).

Because the process of mapping was untested until now, it went through a number of phases which, if repeated, could probably have been streamlined. Now that proof of

concept has been achieved and not only has the system been mapped but a relatively simple method for its mapping been discovered then that process could be repeated in a rather shorter timeframe. Identifying projects within systems, populating them with practices and identifying the connections between them is a process that could be repeated to address other systems of practice.

2. What are the relationships between practice and governance within this system?

This question represents perhaps the key contribution of the thesis overall. As a result, the answer is drawn from all three empirical chapters. Chapter four addresses broad themes of governance between large parts of the Blackdale system. Chapter five takes specific examples of governing relations and uses them to highlight specific ways in which practices relate to and govern each other. Chapter six notes specific cyclical patterns of intervention and feedback indicating reflexive governance practice.

In Chapter four, practices are seen to govern through the curation and creation of timespaces (Schatzki 2009). Practices of Governance, for example, create legal and technical standards for practices, curating the elements and relations that themselves curate performances. The Practices of Construction create a timespace in a much more literal sense in that they create a physical space that practices are carried within which itself sets certain limits on what those practices can include. The Practices of Habitation, in the case of those tasked with the upkeep of the finished residences, maintain that timespace either by enforcing rules around conduct or maintaining the building in a more technical sense. Practices of Habitation carried by residents have a different effect on the rest of the system. Although notably isolated from all but the other Practices of Habitation (5.4.3), they instead form the basis for the Student Experience. The Student Experience, rather than being necessarily the experience of students, is an emergent property of resident practice and feedback that the University uses to set new policy concerned with the assumed needs of residents. In this way the Student Experience is responsible for curating the timespaces occupied by UEA policy and arguably wider governance practices from then on by setting the standard for what students are perceived to need.

Chapter five takes a specific example of a governing relationship between practices from each of the three bands in Chapter four. Each example highlights a form of governance and addresses the relationships between the practices that are present. Section 5.2 took the example of a board meeting and stated that while it could be seen as the initiating point of the system of practice the decision being made was very much just a connecting point between various dynamic forces emanating from wider UEA policy, the demands of the Student Experience and operational needs around funding and efficiency which made the creation of new residences all but inevitable. When taken as a part of the system of practice, this moment of governance becomes simply a moment in an evolving system being driven by forces far removed from and beyond simple decision-making. This demonstrates that decision-making, within a practice framing, does not deserve the primacy is it accorded elsewhere and that agency is distributed much more widely across time and space. While not a conscious actor, an aging property makes demands on governing practice as forcefully or more so than a disgruntled parent might do. Any intention manifested within this decision is as much as reflection of context as it is a conscious act of decision.

Section 5.3 took the example of the design process for Blackdale, beginning at the point where the board meeting had given permission to progress and effectively ending at the completion of the development. Design in this case was a project comprised of a range of connected professional practices steered through a reflexive risk management process by a series of governing practices which recruit, curate and bind those professional practices together into a project. Here governing practices are reflexive and anticipatory, able to react to what is understood to be an internally dynamic system. This process is a empirical example of reflexive governance happening organically as well as a case of connected but identifiable practices of governance intentionally creating, maintaining and steering a project.

Section 5.4 addressed the impacts of interventions instigated within the design phase on the everyday practices of residents post-occupation. The finding was that the effects of interventions were unpredictable, in no small part because the practices that do strongly influence residents' practice are not part of, or factored into, the Blackdale system of practice. The last finding of Chapter five was that the Student Experience, as it

pertains to driving policy, represents a strong disconnect between the practices of everyday life and policy as implemented. This is in spite of an ostensibly reflexive relationship where the University collects information from students through surveys. This agnotological confluence of unpredictable practice and an unwillingness to engage with those practices in order to manage them effectively is most likely a result of operational expediency but could be more effectively governed using the distributed reflexivity approach suggested in Section 6.3.4.

Chapter six (6.2) identified a series of reflexive cycles present within the Blackdale system which contributed to its completion and relative success. These represent processes of ongoing learning and anticipation which inform governing practices and join systems of practice in time. These produce a continuous learning process not just within but across systems. They curate governing practices through information transfer and codification of learning into design documents as well as aiding in the recruitment of more closely aligned practices through the maintenance of links to local companies and practitioners.

Shove (2015) states that changes in practice can come from anywhere and the conceptual framework (2.4) for this thesis asserts that a relationship between practices that causes a change is a governing relationship. In answering this question evidence has been found that practices influence others in many different ways across different scales. On a systemic level there are interactions between large parts of the system which exert an influence on others through connections between practices and the creation of timespaces through performance of practice (Schatzki 2009, 2011). Practices govern and are governed through different types of practice relations (Schatzki 2015, Macrorie 2016). All practices can govern, but Practices of Governance are defined by the carried intention to influence others. Once an intervention has been produced by a Practice of Governance it comes into contact with other practices and in order to avoid disruption to the intention of that governing practice anticipation of the likely outcomes of contact must also be an element of that intervention or of the Practice of Governance producing it. Any feedback must be acknowledged and factored into the next iteration of the intervention to be implemented. This represents a fundamental challenge to command and control governance which carries an

assumption of already knowing what needs to be known and that only one intervention is likely to be needed to achieve a goal (Smith & Stirling 2007).

3. What are the implications for reflexively governing systems of practice for sustainability?

Chapter six (6.1) begins with an exploration of different instantiations of sustainability within the Blackdale system. It finds that several different understandings of sustainability operated concurrently, if not always harmoniously throughout. That ambiguity, in terms of sustainability, as a goal (Walker & Shove 2007) further complicates efforts cultivate and develop it within the system. In addition to being understood differently, sustainability can be performatively different as well in that regardless of how it is described at the outset it can manifest in practice as different effects. These are often more in terms of maintenance of a status quo rather than an effort towards any more lofty goal. As Chapter one makes plain, if we are to establish a sustainable system on any scale then status quo is not enough and as such the distributed nature of sustainability needs to be engaged with in and by practice.

This variance in the understandings of sustainability presents a challenge to governing practice, both the current paradigm and to a practice-based one. Its already fractured nature suggests that it is not being cohesively steered in any way, but Walker and Shove (2007) warn against the idea of trying to tightly define sustainability for fear of aspects of it being lost. By the same token there are dangers in trying to address several different versions of sustainability simultaneously, or individually for that matter, for fear of a focus on one aspect overshadowing the others. The current predominance of economic sustainability and that of the status quo, often at the expense of environmental or social concerns, suggests that this may be happening already. Sustainability is not a practice in its own right; it cannot be performed as such. It requires, in effect, a practice to carry it. Such a practice can then be performed in a way that can be sustained indefinitely, given no drastic change in context. This understanding requires a more subtle and responsive form of governance that is more attuned to notions of practice so as to be able to interface with and guide practices.

Section 6.2.2 contends that the only way to resolve this inherent ambiguity is through the creation of a reflexive system of governance. Not just in terms of the various examples noted in Section 6.2.1, but a more distributed system where the understandings and methods of intervention championed with the first order silos are applied universally. Most Practices of Governance are in some way reflexive even if there is no explicit intention to be. A systems of practice approach seems to confirm this in the sense that because governance is endogenous and each intervention is an interaction between practices there is always some feedback, even if it may not be acknowledged. Armed with that understanding and with several examples of reflexive practice being effective in encouraging sustainability, the challenge becomes harnessing that interconnectedness and the understanding that governing is itself part of the system rather than controlling it. This means that there is a need for an approach to sustainability that is more distributed in accordance with second order reflexivity. In order to be able to meaningfully encompass and guide the whole system of practice, with its varied concepts of sustainability, there needs to be a form of governance that acknowledges that variance and can govern accordingly.

Having established a need for a system of distributed reflexivity for the governance of sustainability, Section 6.3 lays out three core principles of that system. In order to be effectively engaged with, a system must be mapped so that its practices, projects and connections can be distinguished. While such a task is challenging for one actor, be they governor or otherwise, it is facilitated greatly by co-production. Co-design allows the mapping process to be distributed and achieved very much faster. To govern reflexively there must be a certain capacity to anticipate in order to avoid or induce path dependency as required. Effective, distributed anticipatory practice is particularly valuable in terms of governance for sustainability as path dependency can be both a risk and a powerful tool. Being able to co-design, map and anticipate from and to all points of a system of practice will allow unprecedented levels of coordination between elements of the system, meaning that, since every part of the system, in effect, knows what the overall goal is the possibility for the sustainability carried with those practices fracturing according to meaning becomes less.

7.2 Thesis Contributions

This thesis contains a number of important contributions to knowledge. They are detailed below, split into three subsections detailing the empirical contributions, the methodological contributions and finally the theoretical ones.

7.2.1 Empirical Contribution

The major empirical contribution made within this thesis is the mapping of an ongoing system of practice. This was achieved not just through the act of visualising the map but through the drawing together of various theoretical concepts in order to arrange the map in a way that both represented the system in its entirety and that would be intelligible to others who were not well versed in its creation. It drew primarily on Shove and Pantzar (2005) and the basic three element model of practice. In order to structure the system in a way that could be scaled up those practices are grouped projects (Røpke & Christensen 2012, Fox 2018) because, particularly in this case, each was defined by a particular goal to be achieved with the shape of the system being defined by the connections between those groupings (Schatzki 2015). By linking these theoretical concepts together, a system of practice map was produced that contained both granular detail around individual practices and the ability to address large scale governing and governed structures within the system.

This mapping process represents a significant expansion of the concepts of mapping practice in the existing literature. Durand-Daubin and Anderson (2014) mapped practices through time, noting changes along the way. Since Blackdale is a system of practices, focus was given to the changing relationships between practices and various projects forming and dispersing rather than tracking any specific practice through time in great detail. The changes in the system were manifold during construction, with whole projects coming and going, but it is important to note that some of its elements remained in place through time. Many of these are represented in the reflexive learning cycles from Section 6.2, which existed before Blackdale was formed and continued to exist afterwards.

Higginson et al. (2015) mapped practices but at a much more granular level than this system, focusing on mapping elements of practice in accordance with the Kuijer (2014) “bubble” model. Very early attempts to map the Blackdale system at a level of elements, or ‘from the ground up’, in the same way as Higginson et al. (2015) produced a map that was so dense that it lacked any meaningful structure or definition when viewed at the system level. The Blackdale system map as it stands stores the data for which elements are contained in each of its practices, but they are not represented visually for the sake of maintaining the structure and keeping the conceptual framework practically useable going forwards.

Macrorie (2016) suggested a mapping technique based on interrogating the types of connections between practices. While these examples of practice relations were invaluable for classifying the specific practice relations between given practices, as seen in Chapter five, Macrorie’s (2016) method was applied to rather smaller systems. For similar reasons of keeping the system map easily navigable it was decided to apply a simpler approach to practice relations based on the three Spurling et al. (2013) interventions (Table 2.3) and reflexive feedbacks and learning opportunities taken from Voß et al. (2006). This allowed an important advance to be made on Macrorie’s (2016) work in that because of a more streamlined mapping process the system could be mapped as it evolved rather than created after the fact.

Schatzki (2016) explains that being a flat ontology means that SPT conceptualises social life as devoid of hierarchy and composed of connected practices (Schatzki 2011). This can be seen in the two different maps found in Figure 3.3, with the first of the two being distinctly hierarchical and based in the perceived power structure of the University and the practice based map being very much more representative of Latour’s (2005) contention that power in systems is generated from numbers connections between practice as noted by Schatzki (2015).

The creation of a system of practice map is not only valuable as proof of concept but opens up a great deal of further opportunities for addressing systems of practice. The process provides a rich dataset that can be mined further to glean specific details on how the system functions. The map itself presents the suggestion of links to other

systems of practice, allowing Blackdale to become an effective jumping off point for accessing other systems. The visualisation of the map itself is valuable because it provides an insight into the large-scale workings of SPT that would be very much more difficult to explain in the abstract and thus can be used to apply SPT thinking to other areas such as industry or government.

7.2.2 Methodological Contribution

While the methods employed to produce the dataset were not revolutionary in themselves, the methodology behind them represents a contribution simply because mapping a system of practice has not been attempted on this scale before. The case study used for this thesis represents proof that such a thing can be achieved, and the process has already yielded not only significant results but the potential for refinements to be made going forwards.

As noted, empirically mapping a system has not been done before in this way. Schatzki (2011) described the process of constructing a system of practice from its visible assets, but this was done in the abstract. This work represents a similar principle but applied much more rigorously in so much as making in-situ observations and producing an empirical dataset to populate the conceptual framework and thus produce the system map. While Higginson et al. (2015) achieved something similar through the deployment of a digital networking approach, the Blackdale system was orders of magnitude larger in scope in terms of data collected and so a more structured approach was needed to display the results.

Durand-Daubin and Anderson (2014) tracked practices through time using surveys. It was clear from the outset that to interrogate this system would require much more in-depth methods and indeed it did. While there was a temporal element to the results displayed in the final map they manifested in the fact that the system itself went through phases over time, moving from inception through construction to habitation. The methodology applied in Chapter three represents something of a scaled-up version of this approach. Through the phases of fieldwork it tracked the movement, recruitment and loss of practices and projects rather than those same activities relative to elements of practice.

Macrorie (2016) developed a systems of practice approach using, diaries, audio tours, participant observation discursive games. This was effective and elements of it have featured in this thesis as well but the difference was that Macrorie (2016) developed a *post facto* picture of the system from existing data and the creation of the system was not a defining aspect of the work from the outset. This version was, from the start, an attempt to map a system as it evolved. That intention defined the methodology.

The successful mapping of the Blackdale system suggests that the methods are effective. Having demonstrated that and taken the time to become familiarised with the procedure there is scope for performing similar exercises on other systems and certainly for refining and streamlining the process. Now knowing the end point should eliminate much of the iterative process to create the final map with that time now being free for more detailed data production either around elements of practice (Kuijer 2014) or applying more sophisticated examples of practice relations (Macrorie 2016).

7.2.3 Theoretical Contribution

Despite the novelty of the mapping process the core contributions of this thesis are still theoretical. It has made a number of clear contributions to existing literature and theoretical discussions about systems of practice and their governance. It has expanded and synthesised some of the thinking on the components and connections comprising systems of practice. It draws connections between SPT and reflexive governance that have been lacking to date. It situates Practices of Governance within systems of practice in a way that has not been considered previously as well as presenting a challenge to the concept of exogenous governance more generally.

In creating this system of practice this thesis has drawn on and synthesised several different strands of literature. Each has formed a part of the structure of the system and added to it. The core elements of the system are the Shovian practices (Shove & Pantzar 2005) that are then arranged into projects (Watson & Shove 2008, Røpke & Christensen 2012). Other structures are present as well, where the practices involved were either not clearly defined enough, in the case the HMG and UEA blocks (Section 4.1) or, in the case of residents' practice, simply not unified enough to be seen to be part of any

overarching meta-practice. Where this thesis builds on these ideas is situating the Practices of Governance within the system.

“For one thing, they are more obviously ‘made’ by human actors who weave multiple practices together”

Watson & Shove 2008 p81

The quote above refers to the creation of projects through agency, the binding of practices together to achieve a goal. The contribution to this kind of thinking made within this work, and specifically Section 5.3, concerning design is present evidence of a Practice of Governance inducing another to become the actor in the above quote. Section 5.3 refers to project management practices being intrinsically part of the design project, effectively creating it. That project management aspect of design is then subject to governing relationships from outside the project as well. This represents a step past governing practices as the unit of governance in SPT which Shove (2015) referred to and actually situates a succession of governing practices into a system as themselves governing.

Another contribution made by this thesis is the synthesising of two different approaches to understanding relations between practice. Schatzki (2015) specifically addressed large scale organisations and the effect that those macro-groupings of practice, within a material context, had on practice while Macrorie (2016) dealt with more direct relations within a smaller context. Section 5.5 gives examples of where, in order to most effectively detail particular practice relations, the two needed to be combined to place a particular practice relation within its material context and thus present a more robust account of its function. Because some of the empirical observations of practice relations did not necessarily fit either the large scale or the small alone it provided an opportunity to apply both together to better understand the results in a full theoretical context.

As far back as 2010, Shove and Walker noted that a move towards more reflexive methods of governance would be beneficial in a world understood to be comprised of practices. Shove and Walker (2007, 2008) discounted the idea of a rational actor, acting

rationally or otherwise, meaningfully governing practices ten years ago; even as recently as Shove (2015) there has been a persistent view that, because of this, practices are ungovernable. Section 5.2 suggests that this is true, not so much in the sense that a rational governor is not intervening in practice but that the implicit understanding of the practice being performed in that act of governance is, in context, not what it purports to be. Section 6.2.1 suggests that more reflexive, adaptive and anticipatory forms of governance are, if not necessarily more effective, certainly more in tune with the dynamic and distributed system that they occupy. Having taken the cycle of anticipation, intervention and feedback espoused within reflexive governance to be exemplary of governing practices is it easier to understand the role of governance in terms of steering than single interventions. This not only allows conception of governance as a reflexive and distributed practice but allows further work to be done interrogating the more specific a nature different governing practices and how they relate to systems of practice. It is the marriage of systems of practice and reflexive governance that perhaps represents the most important contribution of this work.

7.3 Implications: A new research agenda for Sustainable Governance

Since the case study performed as part of this thesis was the first of its kind, if it is to be applied widely it must first be corroborated. Even the Blackdale case study itself provides opportunities for additional research before having to look too far elsewhere. Blackdale Phase 2 is likely to be as close as possible to a repeat test that could be used to test any refinements to the methodology. The University itself is a large system of practices, at any given time playing host to several large construction projects at various points in their evolution. Any of those represent the ability to repeat this methodology in a still relatively consistent setting.

The Blackdale case indicated numerous other systems of practice in contact with it. These would be worth interrogating partly to discover how they connect to the system and expand the approach but also for the sake of validity. To be able to say that the practice connections seen coming from national government or residents' home lives or academic responsibilities were truly connected systems of practice in their own right would be valuable as confirmation of the robustness of the approach. Having already

established some of the elements of those connected systems of practice as elements of the Blackdale system there is not only a common starting point but an anchor point around which to structure a new system branching from this one. This approach is novel, but it would be appropriate to test its limits and ensure that this system is fully understood before moving on to an entirely new one.

Having been tested for robustness there is then a great deal of scope for expansion of this approach. The preceding paragraph notes the interrogation of other systems of practice being vital for advancing the understanding of this approach, but just testing against similar criteria belies its potential for comparative analysis of the almost infinite possible variations of systems. Further lines of enquiry might include expanding the temporal range of a system, either in terms of a series of images over time or simply as a flat plane including all of the practices recruited and lost over time. Archival research could be done to reconstruct past systems much like Spurling (2018) and compare them to more contemporary examples. There is scope for examination of different cultures and environments to see how practices might be different as well as different professional settings or indeed more explicitly governmental systems. One of the problems of mapping system of practice, noted in Chapter three, is that its distributed nature makes it difficult to bound spatially. While acknowledging this there is obviously the potential for spatial expansion of the system, either in terms of 'anchoring' it to a larger physical area or in terms of simply pursuing a wider data set to encompass a larger number of practices.

There is an open question of whether or not a system of practice even needs an anchoring point, or if it could have several. A more detailed interrogation might be made, for example, of three sites of practice, taken as central points of their own systems with scope for interrogating of, particularly, the practices linking them. The flexibility of this approach is both a blessing and a curse since the potential for different systems of practice to explore is virtually infinite.

Crucial to this particular work is presence of sustainability as part of the system. Blackdale was partly chosen as a case study because it was an example of sustainable construction, so that this aspect of the system could be interrogated. The empirical

results of this were interesting, as seen through the lens of another approach to the techno-behavioural. That said, more than any other aspect of the system, the effects of or on sustainable practice would benefit from comparative analysis to other cases. It might be instructive to begin with a more overtly sustainability-focused development such as the Enterprise Centre at UEA, but data gathered from a system that was in no way outwardly engaged with sustainability may well be more enlightening. When thinking about governance there is definitely more to address than managerial enthusiasm. It would undoubtedly be useful for developing the approach to see the results of different forms of governance manifested as practice. This might include a more reflexive system as advocated by this thesis or indeed a much more proscribed 'Iron Fist' approach. Such a system might well produce desirable outcomes in terms of resource intensity or efficiency but would likely produce very different relationships between sustainability, reflexivity and practice.

Similarly, it is entirely possible that the scope of the system itself might have an effect on the manifestation of sustainability within it. Having talked about different spatial scopes there is a hanging question, when also discussing governance, around national level governance. This work was performed by one individual with one cohesive view of one system consisting of around 60 practitioners, but how might a group of researchers balance a system of practice drawn from 1,000 practitioners? This would certainly require either a new or a very much streamlined methodological approach to be able to map such a system within a useful timeframe. To address a national scale system of practice would probably entail a constellation of smaller systems. For example, taking Parliament as one system and then perhaps addressing the various departments to interrogate links to other systems, such as transport or power infrastructure, before pulling back to find links in practice between departments that might foster a more reflexive relationship. These are significant hurdles to be overcome but if this approach is to be able to address the kinds of problems outlined in Chapter one then it is going to have to be able to scale up.

Scaling up a system like this, certainly to a level where there would be, by the standards of Blackdale, multiple systems involved would produce avenues for theoretical progress too. If SPT has been criticised previously for its focus on minor, or esoteric aspects of

the human experience, a systems of practice approach on the scale of governments rather puts that criticism to bed. In terms of dealing with groupings or scales of systems the foundational concepts are already present at Blackdale. The structure of this system included the grouping of practices into a series of increasingly dense meta-practices forming the projects of the system and works well for a system at a given scale, but there might be difficulties joining systems at different scales together. The issue of scaling systems of practice may simply be a theoretical question of creating a nomenclature for ways to classify large scale groupings of practices. It would have to involve defining, describing and codifying units with certain properties systems of practice by, for example number of practices or connections involved or perhaps the geographical area involved.

Having already graduated to more practical questions of how to use and apply a reflexive systems of practice approach, two questions remain. The first is how to operationalise such a system in practical terms, and the second is how an applied reflexive governance of systems of practice approach might be useful for action research. One of the main weaknesses of the method used to map Blackdale was how long it took. There are any number of reasons for this that are detailed in Chapter three, but if such a method is to be applied then it needs to be both finessed and sped up. Co-production of any map would likely accelerate its construction (6.3.3) as in effect all parts of the map are creating themselves. Utilising a co-design methodology would also presumably allow the system, as mapped, to be altered over time as well. Such an effect could be achieved using similar methods to those utilised in phase one of mapping Blackdale (3.3.1), with each practitioner being given the option to map the practices local to them and connections between them. With minimal coaching as to the nature of SPT this should produce a detailed system of practice utilising a distributed viewpoint generated by all those present. Such a system, if produced in near-to-real time implies a certain capacity for anticipation as well.

Having mentioned streamlining the process of creating and monitoring a system of practice, it might be useful to enquire as to technological means by which that could be achieved. For example if it was possible to create an entirely digital map it could be updated constantly or even automatically in response to changes in or updates to

performances of practice through the system. If being taken up by a professional body as a management tool perhaps such an endeavour could be enhanced through bespoke software or a model app that could be used not only to update performances of practice in actually real time but also allow a certain level of distributed agency as practitioners could be informed of upcoming interventions in their practice and give feedback ahead of time. Telecommunications technology could enhance reflexivity within a system greatly by adding reflexive cycles to any intervention and allow the system to, to all intents and purposes, be aware of itself in its totality. As noted, this kind of technological impact would likely be most easily applied in a professional environment where practitioners are, in effect, proxy to their practices since they are only present within the system to perform that professional practice (5.3). Finally, having produced a digital, dynamic, practice based environment, such a dataset could be applied to higher levels of Building Information Modelling (BIM) software (NBS 2017), as noted in Section 6.2.1.1, to create a real-time digital map of practice and the physical environment in order to provide data on how the two interact. These ideas would improve the applicability of a systems of practice approach, accelerating the mapping process and allowing much greater reflexivity. Combined with bespoke technology such an approach could be applied as a discreet intervention into systems in its own right, or as a product package.

So far in this section there has been a discussion of how to refine the system of practice approach, how to expand it into new arenas of practice and to operationalise it for use as a tool for encouraging reflexive governance. Finally, there are possibilities for action research using this approach. With its combination of theoretical underpinnings the approach is almost perfect for action research since it is, both in principle and in operation, learning about learning about governance in practice. It has potential to simultaneously improve systems in terms of effective governance while also intervening directly in Practices of Governance through education and adding meanings around reflexivity and the need for it. In a slightly ironic twist to the exogenous governance argument a systems of practice approach, if operationalised as above, might actually give governors the 'complete' view of the system they occupy, though it would also give that same view to all practitioners since they are all governors too.

Given the reflexive nature of such a system it might produce a certain predictive capacity as well; not simply in terms of near-term anticipation but with some practice potentially identifying possibilities to lock in desirable aspects of the system. Obviously this is attractive to those seeking to govern but would also be invaluable for researchers who could potentially use the dataset to identify trends and map future scenarios. Far from just fore- or back-casting scenarios one might even be able to, for example, map out a route to decarbonising a particular practice by identifying which elements would need to be eliminated, recruited or positioned by a particular time. That process could then be applied to digitally mapped environment to allow practitioners to assess which interventions could be achieved when and what effect that might have on the physical environment. Obviously, these possibilities are speculative but it is clear that the potential is present for rapid, and radical changes to the socio-technical fabric of everyday life. Given the paradigm shifting properties of SPT there is no guarantee that reflexive systems of practice will be embedded worldwide by the 2020 deadline set by the UN (AP 2018) in order to make much headway in the struggle to save ourselves, and on such a tight deadline there is no time to refine the approach just in theory. Thankfully there is no real need to; as noted this approach is ideal for action research since not only could it be applied relatively easily but reflexive, anticipatory learning and thus dealing with any implementation issues are inherently part of the process and only add to the nature of such action research.

There is more work to be done to refine the understanding of reflexivity and systems of practice as well. With the best will in the world there always going to be limits to how reflexive a large system can be while maintaining its dynamism. Similarly when dealing with connections between systems of practice within a larger timespace there will be issues arising from how those systems interact and overlap, calling into question the limits of reflexivity and points of communication between systems. Relating to Latour's (2005) discussion of differential capacities there are questions to be answered about how systems might relate and be connected to each other. These are somewhat mitigated by that same reflexive process and its own inbuilt the understanding of the "eternal tension" between knowing and acting (Rip2006). It remains to be seen if these will prove to be fatal issues but the nature of a reflexive approach to systems suggests that, with suitable humility and attention, pathways and solutions can be found.

This understanding of the nature of social and material life, as well as what it means for the nature of governance, has the potential to quite literally change the world by allowing for more effective forms of governance. Taking a systems of practice approach and applying it to reflexive governing practice as well as making it practicable, measurable and scaling it up will be difficult, but shows promise. This approach has real potential for 'closing the gaps' (Doherty 2014, Vassallo et al. 2018) between intention, design and action, changing how sustainability is manifested across systems and helping us get to grips with potential futures enough to begin moving in the right direction. Reflexive governance for systems of social practice for sustainability might be a radical departure from the current paradigm but these are strange, dangerous times and if we, together, do not find a way to move quickly and decisively in the fullest possible knowledge of our surroundings and destination then we may become lost along the path to a sustainable future before ever realising we had taken a wrong turn.

Appendix 1: **Full Blackdale System of Practice Map**

Appendix 2: **Sample Interview Protocol**

Internal/External stakeholders:

With your permission, I would like to record this session. This is primarily to aid note-taking and transcription. Any quotations made will be run past you before publishing and you have the right to remove or re-quote anything used. All files are anonymised. Recordings will be kept in a secure location and destroyed in due time. If at any point you wish to be withdrawn from the study you may do so without needing to offer a reason.

The interview is planned to be no longer than an hour. During this time you will be asked a series of questions about your working practices and connections with other actors in your professional network. There may also be a mapping exercise involving a small amount of drawing. The exercise is intended to create an understanding of the network of practices and practitioners responsible for the production and management of these new buildings as well as the lives of the residents.

You have been asked to participate in this study because you are an important stakeholder within the network being studied. The project is looking at a network of practices and the spread of sustainability related thinking and practice throughout that network. The intention is to gauge the effectiveness of practices of governance on introducing and spreading sustainability.

Interviewee

Identifier:

Position:

Interviewer

James Graham

Meeting Held:

Date:

Location:

Sections used:

Practices:

Network Connections:

Connecting practices:

Network exercise:

Additional Topics discussed:

Documents Obtained:

Post interview comments/Leads:

Questions:

1. What is your role?
 - What does that entail?
 - What tools do you use to execute it?
 - What skills?
 - What does it mean to you?
2. What department do you work in?
 - What is its purpose?
 - What does it do to achieve that?
 - What is its connection to Blackdale?
3. Who does your department answer to?
 - What kind of interactions do you have with them?
4. What is your place in the team?
 - What is it that you deliver?
5. What do you do every day?/What do you do most days?
 - What do you do less often that might have a bearing on this project?
6. Is there any part of your job that is specific to the Blackdale project/buildings?
 - Do you have to do anything different with them as opposed to others?
 - Are there any limits or boundaries imposed on your actions by having to work with this building?
7. What is required for you to have done your job correctly?
 - For yourself?
 - If you do not feel you have enough time/material/skill to do everything, what do you prioritise?
8. Where does your authority stem from?
 - What is it that qualifies you to make decisions on this project?
 - Government mandate?
 - Professional accreditation?

- Experience?
 - Professional contacts?
 - Personal experience?
9. Are there any specific actions you undertake as part of the Blackdale project?
 - What does that entail?
 - What tools do you use to execute it?
 - What skills?
 - What does it mean to you?
 10. What are your interests in the consultation process?
 - What does it involve for you?
 - What do you get out of the consultation process?
 11. Can you think of anything you do that might in/directly affect the residents?
 - What does that entail?
 12. What preparations/provisions, if any, are you making towards the occupation date?
 - Training/induction?
 - Information/meetings?
 - What has happened so far?
 13. Soft Landings process?
 - What has your interaction been?
 - How much of your preparations have they been responsible for?
 14. Are you aware that these are intended to be sustainable buildings?
 - Does that matter to you?
 - Where does that interest come from?
 - Does it affect your work?
 - What does sustainability mean in terms of your role?
 - Are you in a position to affect sustainability on campus, or that of Blackdale?
 - If so, how?

Additional notes:

Residents in halls:

With your permission, I would like to record this session. This is primarily to aid note-taking and transcription. Any quotations made will be run past you before publishing and you have the right to remove or re-quote anything used. All files are anonymised. Recordings will be kept in a secure location and destroyed in due time. If at any point you wish to be withdrawn from the study you may do so without needing to offer a reason.

The interview is planned to be no longer than an hour. During this time you will be asked a series of questions about your working practices and connections with other actors in your professional network. There may also be a mapping exercise involving a small amount of drawing. The exercise is intended to create and understanding of the network of practices and practitioners responsible for the production and management of these new buildings as well as the lives of the residents.

You have been asked to participate in this study because, as a resident of Hickling and Barton Houses, the practices you carry are a product of the system being studied. The project is looking at a network of practices and the spread of sustainability related thinking and practice throughout that network. The intention is to gauge the effectiveness of practices of governance on introducing and spreading sustainability.

Interviewee

Identifier:

Home/International:

Course of study:

Year of study:

Interviewer

James Graham

Meeting Held:

Date:

Location: Blackdale Cafe

Sections used:

Practices:

Sources:

Network Connections:

Sustainability influence:

Additional Topics discussed:

Documents Obtained:

Post interview comments/Leads:

Questions:

1. This project is looking mostly at resource use, with that in mind, can you give me 3-5 things you do within this building that use resources such as energy/water/heat?
2. Thinking of each of them, can you tell me how they've changed since you got here?
 - Materials
 - Skills
 - Meanings
3. How much of that did you bring from home and how much was formed/acquired here?

Practice					
A					
S					
I					

4. How much of this would you say is informed by the building itself?
5. Can you tell me anything about the residences?
6. Do you have any interactions with university staff?
 - Cleaning

- Maintenance
 - Helpdesk
 - Accommodation Office
 - SRs
 - Security
7. Are you aware that these are particularly sustainable buildings?
- Does that matter to you?
 - Where does that interest come from?
 - There are a lot of sustainable aspects to these buildings, how do they affect you?
 - CLT
 - Lighting
 - Water
 - Heating
 - Button
 - Bins
8. Going back to the initial question, if you had to pick one thing you do within this building that was to do with sustainability, what would it be?
- What does sustainability mean to you personally?
 - Has that changed since you got here?
 - What influences has living in this place had on sustainability in your life?
 - Lower energy
 - Altered practice
 - Changing patterns/habits
 - Different resources used
 - Are you in a position to affect sustainability on campus, if so, how?
 - Complaints
 - Feedback options
 - Picking up litter
 - Nagging

Additional notes:

Appendix 3: **Sample Transcript**

Sample is the transcript of the Project Manager interview. Voice of interviewer is in bold and names have been redacted in favour of identifiers from fieldwork.

Ok, erm, the purpose of this interview is to situate you and your, work within a, sort of, pre-understood network that I got from [Project Administrator], find out what you do, with, as part of your job and, um, look at how you interact with other actors, whether they're already ones in that network of people or, not. If they're outside then I need to go and, look up other people as well. Erm, and that's it really, it's relatively simple, and from that comes all sorts of other, things which I'll worry about later. Errr... Right, ok so, erm, where do we start? Yes. The first question is, what is your role?

So, I am, an external project manager, working for the client.

Erm, ok, which does, neatly put you in the [unintelligible] with [Project Administrator]. Which would put you... there. So, erm, the next question is, er what, what is it that you deliver, as part of the project? What is it that you...

Not a lot

[Laughter]

W- Well we, our role is to manage other people's delivery.

Ok

So we'll, our delivery, if you like is, erm, reports to the project board. We monitor everyone else's delivery. So we'll give direction to all of these people in your team so, structural engineers, civil engineer, architects, er, and ask them to provide the information we need to put out to Tender or to give to the contractor, so we-, so our, we don't, so, the architect will have an output which is a specification and a set of drawings...

Yep

...and he'll have the technical input of those, and that's where he uses his experience and qualifications to provide that technical output, and, similarly the construction engineer will provide a specification and a set of drawings and he'll use his knowledge experience and training to provide those. We sit, kinda as you've got it here, across the top and we manage all of those people providing their outputs. We don't necessarily, we won't comment on their technical, appropriateness of their design because that's not what we're qualified to do but we'll make sure that they're happy that they've produced a design that can be, er, constructed. Does that make sense?

Yeah

Er, so our only output is providing a report which goes further up the tree to the project board to say, collectively whether all of these people on the project team are providing information and performing in the same way and such the- including the contractor.

Ok

So, so the other outputs would be a risk register. So again, monitoring all of these people and listening to what they're telling us and how they're progressing. With them, you know er, we do a risk register and for that, the risk register will be an issues log. So an issue is a realised risk, can be a realised risk. Erm

So what sort of things qualify as an issue?

Em, so er, a risk is, erm, you may find unknown ground conditions. So you might find a sinkhole, worst case. Erm, so you might find unknown, so that's a risk so you put it up on there early doors how do we mitigate that risk? With a site investigation. We'll do some trial pits, we'll figure out if we've got problems or not. So, er that's a risk, er if in doing the trial pits you find 'Oh yeh we have got sinkholes' you take it off the risk register, you put it on an issues log because, it's been realised. So the issues log is real- they're actual issues that you're dealing with onsite, so something has happened and you have to deal with something. So this is kind of mitigation, and this is actually, action.

So who does, if you're writing the register who is it that goes round and sort of checks for risks. I take it you're not doing, balls (?) and things?

Erm, well we'll manager the register as a whole, so, w- the way we do it, and er everyone does it different, er, we generally er, when we first get appointed on a job we'll make a first pass, and we'll try and fill in some of the risks that we think might happen.

Ok

You know, just based on our... You know, so you've got your building at UEA, we generally know what the ground conditions are up here 'cos we've down a few projects up here so we wouldn't put, um, the ground conditions on there. Other times, we might, if we don't know, or have no experience we might put it on there. So we'll do a first pass, and then what we do is, we get everyone in the room, so representatives from each of these people and hopefully the contractor if he's onboard he might not be, but all of these people and we'll er, ask them, you know, wh- what are you worried about? You know, and a structural engineer will, the architect will say 'oh I'm really worried about plan and the height of all these buildings and trees' and so, we'll say like 'Well, I mean, that's a risk and so we might not get a plan if we make it twelve stories' so we put it on the register as a potential, risk and then we'll say to the architect 'Right so, what can we do to mitigate that?' or we'll have a planning discussion with the planners and we'll see what their thoughts are. We might canvas local opinion. So they're the mitigation bits, to go through to. We'll agree with everyone, the whole register, and that's the, that's the, that workshop is probably a good half-day to a full day. It can be, on a big project, but it does weed-out a lot of things and it focuses people on the thing they should be thinking about and, and what, coz the architect might come up with stuff that the structural engineer'll think 'Oh yeh you're right, I need to, think about that when I'm pulling these bits together'. So, once that's in place and we've published it, on a monthly basis, we'll check through all those mitigation things and ring up the, er, architects 'Alright have you had a chat with the planner, er, and what's his opinion' You know, and we'll, keep track of it that way.

Ok

And then in, the monthly meetings that we have, so we often will have regular, pre-contract meetings on a monthly basis and once we're in contract we'll have erm, so progress meetings. We'll ask everyone if there's any new risks er, that we need to add on the register and then we'll republish the list every month.

So with this, with your workshop, would you say that was, um, pooling everyone's expertise, but also pooling their previous experience...

Yes

...from previous jobs. Ok.

What you do tend to find is a lot of rubbish, to be honest, like people always say, what's a risk? Budget, yeah sure budget's a risk, right now, Programme? Yeah, we've got a pretty tight programme, yeah, alright. So you get past those ones, which are just, sort of... Erm, th- you, your, you do get a few gems that come out. You know, 'Oh, I did this last year and the water main's not big enough down bluebell road' You know, we did the, say, we did the school, the academy, the walkway wasn't big enough, so you might have to pay a reinforcement charge with Anglian water or something like that. So they're things that k- kind of come out of, that you're not expecting, that you sit there and talk about then.

Yep, ok. Erm, ok. So as part of your job what would you say you do every day, or most days, of your general life, er..?

Drink a lot of tea

Hm, fair enough

Erm, no, we erm, we, so we're, so if I was drawing this diagram. I won't change it. I would kind of put the contractor, up a little bit more, I'd probably have him, slightly in here. Just slightly sort of, below us, erm, but he, the, the like, here is [Contract Manager], sit's next door. So, [Contract Manager] manages his team and like, you've got all these designers in his team as well on the design and build contract, which, novations. So he's managing those people and I'm managing, these people on the client side, so, what happens is, on... are you specifically focusing on, design and build? Or are you focusing on all procurement methods?

Um, What I'm looking at, I think, or what I'm trying to def-define, is what it is that is done as part of the building process that affects, erm, what, how, sort of people live in the building. That being said, in order to understand that you've got to understand the process that produces the building er, and then the various, the millions of people that are involved in, all tha-, I mean, the things that they all do involved in building buildings.

Em Ok, so if you can, you can procure projects in a number of different ways.

Yep

The most common one at the moment and it has been since the nineties, this one, is Design and Build. So, erm, in pre- pre- the nineties, it was always Traditional or what we call Traditional contracts. So, that's where you've got a client, and you've got an architect and an engineer etc etc etc. and they will stay client side and they, they always own the design. The design always sits with the client, sits over here, and, at the right time, erm, they employ a, a contractor and they say 'Right, we want you to build this' and the client will effectively, with his team of architects and engineers, tell the contractor exactly what he wants to build. So, the contractor's quite, erm, I don't want to use the word dumb, dumb is the wrong word. He, he's just a builder, he's not doing any design at all, just building it, and he's doing what he's told. So, the good thing about that is, the client retains complete control over the design, s, if he's the owner/occupier, that's great, because he, he actually says 'This is, what I want, and this is how I want it to work, and this is the bit of kit I'm going to use, I'm going to tell you what heating/cooling system to install' He's in complete control of that design, but, it takes longer. Just because, he has to do all of that work, up from, and then give it to a contractor to price, and build, and that bit takes quite a long time whereas with design and build, as you've got it here, you start of, and you develop the design up the a critical level. So, you know that you're going to have air con, but you don't actually know necessarily, what type of air con and how it's going to operate. You'll probably know the parameters it'll work in so, up to twenty eight or something like that, and er, down to sixteen. You'll know the parameters but you won't know the actual system, and then with Design and Build, you employ a sub-con- er, main contractor and novate all those

designs across, and those design those designers' loyalties are now with the contractor, so, because he's paying them, he's their employer. So, and the contractor will, will be fronting it up, with, with the client, us, and, he'll have one eye on getting the building done, but the other eye on, commercially, making as much money as possible. So, whereas, traditionally, you would have specified 'Right, I want Mitsubishi so and so' and, you know, because, this it gold plated kit 'It's going to cost me, I know it's going to cost me but, I'm happy to pay for it'. So, you would, traditionally you would say that this is the bit of kit you would install, in Design and Build, you'd give him a set of parameters which invariably aren't detailed enough, to actually lock it down to, what you're trying to buy, and some things you can't describe. So, erm, you could describe performance but you can't describe build quality. So erm, er what's a good example. I suppose it's kinda Rolls Royce vs. fiat or something, you know, you can't describe that build quality, what makes Rolls Royce good, just better materials and the, QA process and all that stuff makes it good. So, you can describe the performance though, you can say, 'I want it to go from 0-60 in less than 8 seconds'. So build quality you can't capture in design and build contracts, so, rather than Mitsubishi you might get an Exhaust-o air con system which, will perform, but in two years' time might be kaput.

Yeah

Right so, but that's what the contractor is looking at, he's looking at, 'Right, well how can I make more money out of this contract, because I've just done a competitive tender application process, which has really nailed me down, I've got to bill against some other people, I'll put in silly overheads, like 2% or something like that which you just can't operate on, and they'll put in silly overheads and win the job, because I know that once they get in post, I can post these alternatives within the contract an then make a bit of money on each of these systems which will boost my OH&P to about 8-10%, which it should be. So day to day, what we're doing is, we're taking all of those submissions and information from the contractor, they submit to us so we're the project manager and invariably we're employer's agent for the contract. So, the Design and Build contract has er, an employer's agent. It could be the employer, but they're the person authorised by the employer to administer the contract. So, we take all of the information from the contractor, all of their submissions, we call them tech-sub and RFI's (Requests For

Information), um, and we feed them into pe- advisors on our side and say, 'They've proposed this, does it meet the contract? Is it going to fulfil what we want I to do?' and we provide them comments back, say, yes we have status A, B, and C. So A, is no comments, B, is, fine, but it'll incorporate these comments and C is, just not compliant, have another go. So, we feed them back, so a big part of what we do day to day on design and build, it's very specific to design and build, is managing that information flow between the two, and making sure he gets comments back in sufficient time to get on with it onsite.

Ok

Erm, the other side, is just the softer side, of managing all of these people, because that, the whole discussion process can be quite combative.

Um, Yeah

So, you know, they've proposed something '[grumbles], it's what they do on every job', it's just what they do, 'Why are you questioning it?', it's just what we do'. But 'We just want to understand how you're going to get this bit, to fit into this bit'. 'Yeah, but the, the little thing, we'll sort it out on site' 'Alright, but we don't want you to, squeeze it together, we just, just tell us how you're going to...'. So, that's quite, by its very nature... people don't like being questioned. You know they just, don't like it. So we try and manage that, communication between the two. Erm, and I guess that, the third part, which is tied up with both of those, is, administering the actual contract. So, there's various things you've got to do under the contract, so the QS will do, you know what a QS is? Yeah, so the QS will do a valuation, onsite. He'll go out, and, usually on a percentage basis, at the moment we've got about 40% of the windows done so the windows are worth... 40 grand, so I'll give it 40% of 40 grand. He'll do a valuation, about, roughly where the works are onsite.

Ok

Under the contract, erm, we do a payment certificate. So valuation doesn't actually exist, it's just a, a side process because we will issue the actual payment certificate on the contract to actually authorise the payment under the contract from the employer to the contractor.

Ok, I think. So is that, payments come in as the project goes on or is it at the end.

No, as the project goes on monthly, usually.

Oh, ok.

There's kind of, two sides to it. We'll agree the contract sum at the outset, so that's the overall payment to the contractor. Then every month, or four weekly, we could have, the QS will do a valuation and advise us of the value of the work on site and the materials onsite, and say that "The contractor has expended this much money..." effectively, so they should be, they're due that much money. We will, we very very rarely do this, but part of our role is to take a view on the quality so, yes they might have done 40% of the windows but 20% of that 40% is damaged, so they're not due payment for that, element of damaged work. So, the QS won't take a view on that, he's just doing factual, they've completed 40% of the windows, they might have done... some of it wrong, but they've done 40% of the windows, so we take the view, as to whether it's, the quality is right they've done it correctly and if, we don't think they have, we issue a 'pay less' notice. So there's all these things under the contract that should be done, and again that's another one so we would issue a payment certificate, well, we'd issue a 'pay less' notice, say "We don't think this is right, so we're going to, pay you less by this much..." then there's a process under the contract for them to within 7 days, I think, contend it, or not and then, assuming they don't, we issue the payment certificate, if they do, we go into that dialogue. But all of that, unfortunately for them, delays them getting paid on the rest of it. So, I've never actually had to do a 'pay less' notice, but that's one of the things that, because we're always talking anyway, erm, and if, the communications good, you don't get into those debates. If you're in London, it's quite cut-throat. Norfolk is a really nice place 'cus it's a small world in Norfolk. You will come across each other, everyone comes across each other, all the time. So, it's much easier, whereas in London, or, somewhere, Cambridge even, you, chances are you won't come across people again, so you, there's less likelihood that you're worried about, not worried but, you're less likely to be difficult or awkward about stuff.

Hmm. Ok, erm. Is there anything you do, you're doing, as part of your position, that's specific to this job, that's... different about it, particularly?

Over and above the normal?

Not even necessarily over and above, just that's different from an... I dunno what qualifies as a normal job... So?

Don't think so

No? Ok.

No, I don't think so

Hmm, ok... This might sound like a bit of an odd question, considering the previous ones, but, what would you say were the most important aspects of your practices, your work? The most important, bits of work you do?

Of the company I work for?

Yeh

It's relationships, and communication. I think, the biggest thing I notice as a project manager, so, all these people, to a degree, sit in silos. They go off to their office, they do their job, they get on with it. Then they issue, well for starters they issue their output, that's the client side design. Whereas, we can't, and we have to communicate with all these people, on a regular basis, and these people. So we have to, manage that whole communication and the relationship, and from my side, the biggest thing I've learnt, is people enjoy working in this environment, with these people, you get a good job, and it's easier, and things happen, and the job gets done on time. If everyone is constantly bickering, like the architect is always having a go at the structural engineer because the structural engineer wants to put a beam straight across his foyer, or something to make the building stand up, you just get this constant bickering between the two and, he'll issue his stuff and he'll, have a barny about it and then re-issue his stuff which will change some of his stuff which will then change some of his stuff and you can get in these little loops, that you don't actually get an answer out and it's just because they're not talking to each other properly. So, the biggest thing about, for us as an organisation, is, we work very hard to form good, trusting relationships with all of these people and these contractors, and these people so that we know that, when we have a conversation with them and we say "Look, we need your help to do this" they're inclined to help us do

that and it might mean, that they're just got to bite their tongue, so like "Alright, we'll just let it go, I'll do it" but hopefully they do, for the good of the project as a whole, rather than, in that silo, "Oh, can't be bothered to do that job because it's just a pain, I'm going to get on this job instead."

So do they communicate with each other or is it, entirely facilitated through you?

No, they communicate with each other, yeh. Yeh, and they have to as well, but they get, they should get direction from us.

Ok, you're nearly done, honest. Erm, yeh that too... for in terms of, outside bodies is it, are you just talking to the, to the people on this list or is there anyone else. I'm thinking in terms of sort of government related to, anything above or, stuff that influences just what you do, is there, legal things, or is it? That sort of stuff.

Yeh, this is very much UEA. Baring this, these up here[?].

Well, I mean this is specifically [Project Administrator]'s network...

Oh is it? Did [Project Administrator] draw this?

Yeh, which is why it's got "Me" written in the middle. This is everyone he interacts with, theoretically, in order to do his job...

Ok, erm, no I think it does count, I mean you've got the Environment agency and people like that.

Ok, so what sort of interactions do you have with them?

Well, again, mostly that would be via the structural or civil engineer and/or through the planners. So, they'll ask for flood risk assessment and the like, and we'll do those studies, usually they come through pre-planning and we know that they're going to ask for those type of things, so we can get the reports done. And then, so we have a conversation with them, "This is what we're proposing to do, what sort of things you might want a flood risk assessment on". So we can go away and get that ready, so that when we put in for planning, the planning authority will then, liase with all of those people, so the environmental angecy, highways etc. etc. They'll get comments back, and

then some of the planning conditions will be, "Please provide a flood risk assessment" ...

...and you've got one.

...and, we've already got one so we apply for discharge of the planning. Then the planners will send our report, to the environment agency who'll come back to the planners and say "Yeh, we're happy with that, and we can discharge that condition". So, it's kindof, pulling those people together, before we get to the planning stage so that we know that we've got everything lined up to just hit the ground running "Right, boosh, there you go". And sometimes we can actually submit it prior to planning to that we don't even get the condition in planning, so we can just get it discharged, in theory, before it even happened.

So, there's a few other people, pre-contract stage that we would liaise with, I think that's most everyone else.

You've got funders up here as well...

Yeah. Ok, um you're from an external, company, to do this, how, does that, sort of, work? You're just hired in to manage the project?

So, the university will employ us, is that what you mean?

Yeah, just curious as to how the relationship works, because, I, don't know anything about this...

So er the university at this level, or perhaps even at this level, I don't know, will agree that they've got a project to be built, they'll get estates involved and say "Right, we want to build this, what do you think?". They'll do a little bit of work, and actually what they'll do, is prior to any fees or appointments, they'll canvas a few opinions. They'll say like, "We want to put this up here what, what challenges do you think, and possibly what so of cost do you think it's going to be" and then they'll go out and they'll employ, usually, us, as project manager, and we'll help them, write the scopes and erm, appointments for all of the client team, and then once we've got the client team on board we'll develop the design a bit so we can know what, actually, more about the detail about what we want to build, then we'll right the tender documents to employ a contractor. So it's in that, order that people get involved.

Do you, bring, sort of bring, the professional, I appreciate you do, to an extent, bring those sort of professional relationships with you but are you bringing them

to the project as part of your, sort of, employment to do this, or is it that you come in to manage a project and UEA says “You have got to work with these people”?

Erm, both I think. I think it's... when we bid for a project, so we always have a bid, um, so, we'll put a submission together so they'll come to us, and a number of other PMs and say “Right, we're going to do this, what's your bid for it”. So, er, part of that bid will be a fee, that'll be in, but there'll be a quality aspect to it as well, and in that quality aspect we'll say “Well, we've got some past experience which we think is really relevant to the building you're now doing” Like, we did, Crome Court, and the road, so put that down as part of our experience, er, and other schemes that we've done as well. So that would be part of our quality bid, but within that, we don't say, we wouldn't anyway say “We've got really relationships with all the particular architects you're going to work with, or, engineers or even contractors you might work with”. That side of it is, kind of implied, I think. So the past experience of jobs, is important, but again, the intangible bit of, knowing the right people at LSI to talk to when there's a problem. Pick up the phone “Right, this isn't going well, needs to be sorted by Friday, can you, let me know how you're going to do it” “Yeh fine I'll get back to you” That, is intangible. But it's there and it's a big part of what we do as a role. If someone came in from London, say, big scheme, s'got to go out. So PM comes in from London, don't know any of these people, or any of these people. He would have, I'm not saying he wouldn't be able to do it, but he would have a much more difficult time delivering the scheme. Just because he wouldn't know those individualise and those personalities, and those capabilities that people have got.

Ok, that's most of my questions, the next bit is more a sort of, practical think, in terms of, if I was to go and talk to, some of the other people on that list, er, would you be prepared to provide some contact details?

Of the people to talk to? Yeah.

I mean even if it's just, company, a name and a number, would be fine. Just because that's the sort of next stage, the last... Part of what I'm doing or most of what I'm doing, in terms of this bit, is, is sort of bottoming out, hopefully everything that contributes to the project. Now I'm not going to be looking at interrogating it all very closely. I mean it's mostly going to be sort of you and [Project Administrator]. You're the sort of nexus for all these things as it comes

through, but the ne- there's a sort of, there's an order out, from this main bit that I need to look at, and it's just, it's things, just things like, where, who do they interact with, where do they get their skills sets from? That sort of thing. Where do they get their expertise from, what's their qualifications etc.

Can I em, what I'll do is, and I' sure they'll, no one will have a problem. If I...

I mean, if they do, that's...

...just get in touch with the person, say "Do you mind if I pass your details on to James, he just wants to have a chat about, the roles that do etc." and then, get 'em in touch with you?

Yeh, that's, that's fine.

So who do you want to talk, do you want to try and talk to everyone? Or...

If possible yeah...

[Unintelligible]

Like I say, I'm not expecting everyone to sort of say "Yeh, fine, come on down" but it's, it would be useful to try.

The people that it would be good for you to talk to is the contractor, I would have thought. er, the Architect, services, civil and structural are the same really. Are you interested in talking to the QS?

It depends, I mean, I guess, the things I'm interested in finding out is what's, what's sort of special about this, this project. So if it's... if there wouldn't be anything different, if the job is literally just to turn up and count the materials involved and that's the same with every job that's... it's not. I mean like I say, I'd be interested to talk to anyone that's on that list I think, just because it's interesting to see where these, things feed in from.

Ok. I suppose it's... I think if you asked that question of all the people, they'll all say "It's, just another job". It's a nice job, it is a really nice job, and it's a really nice client as well but it, because this is our day job, it's just another job.

Yeh, job's a job...

It sounds really bad, doesn't it.

No, it's well, unfortunately that's kind of what, what I'm looking for. Because my, and I've been trying desperately not to mention this, because it's... not very interesting and not particularly relevant to what anyone else is actually doing is what I'm interested in is the sort of, 'practices of normality' not, how do you change things, like what's different'... not particularly what's different about this project but, how, do the things that people just do every day, as part of their job feed in to this, having this new and exciting building? That sort of thing, it's one of the things I like about my theoretical approach is that it's not looking at novelty, it's not looking at, sort of shiny new... It's not looking... A lot of the approaches tend to be technological based. Like "We have this fancy new car" or "This fancy new cladding to go on the outside or something, that'll do, various different things". There's nothing wrong with that, as an approach, but it hasn't really got us where we need to be. So what is it that people just, do every day that contributes or doesn't contribute to a building being sustainable or not. So that, yeah that, sort of... My job unfortunately is to sort of tease out, what it is about what you're doing every day that's, if only slightly, different, or if it isn't, at all... Erm, and that means that you get sort of plugged into this network of things but not necessarily left with this thread of what it is that makes it sustainable.

I think you'll probably that most people, some of these people are creative, like the architects and stuff, but they'll all take a lead, from the client, and the PM up here. So if the client is saying "Right, I want to do something different" you know, "I want to do, something about straw bales". These guys, probably won't think of that, they'll go into auto-pilot mode: Steel frame job done, beam/block floor er, cladding, easy-peasy, crack it up, away we go. Partly because it's what they did on a previous job, and it's easy, and they can just, almost cut and paste the specifications that'll probably be good, because, for us unfortunately, and the whole thing is a commercial activity. The client wants a building for X amount, for X amount of money and the designers and contractors want to build it for their element, for X amount and get onto the next job and, move on. I think some, some of these people are creative and when you get to, really expensive architects, like, signature architects, like Fosters, and Staton Williams and whatnot...

they've actually got, because their fee is so big in the first place, if you've brought them on board because of their reputation, and their name. They actually will spend time and er, innovate. Perhaps, is that the right word to use? But they'll look at, all different things that you can do, and they'll spend time doing that, but 9...5% of projects are more commercially driven, "Got to be done by this date, got this much money".

Yeh

There's moving from those two milestones, and so by that very nature, it cuts down your ability to be innovative, and to stand back and say "Ooo... what if we did it this way and used these materials instead of this material" and I think it's, very much, that side of if, in terms of what makes things different, and breaks the norm is driven at this level, and maybe even this level, for them to say like "We want something..." Like the Enterprise Centre, they said "Right, we want something special". From the outset, it was delivered from this level, "we want something special" and then these guys have got the ability to build into their fee, a bit of time, to be innovative, if it's not driven by this though, and it just comes out as a project, this will be very tight commercially, and people want to get in and out, do the next job...

Hmm... Makes my life a lot easier, at least.

It's a shame though, because, it's nice to do different things, and I think we do. And I think we do... this is, this'll be different, a little bit, but it's still, you know, there's a lot of PV on here and stuff, and, erm... the, there's a lot of, erm, energy monitoring, and the ability to, tweak systems, to be very efficient, is here, and it certainly might well be very efficient, but it is, just, run of the mill stuff still. There's nothing, mega-different. Like Crome Court had the Green Wall.

Hmm

I know that was different, but don't know how that got on.

Ok

Em, if there's anything else, let me know, and I'm happy to spend some more, you know, some more time with you. I'll get in touch with the people and just say er, this is what you wanna do. Can you send me your details, so, is it just your email you've got.

Yeah, and it's just, probably the easiest way of getting hold of me. If you want anything else...?

So what is it your studying for?

Errm... It's a, PhD, in... "Governance of Social Practice". Which isn't going to mean a lot to anyone unfortunately... I can do you a like a little, like what I'm looking for if you want?

It's just so that I can say, rather than just saying "James wants to have a chat" I can just give them a little bit of background about, er, what it is. And then I'll let them get in t- I'll just make sure they're happy and then give you their details and you can um, get in touch with them. I'm sure most of them will talk to you, if they don't let me know and I'll... I'll er, I'll ask 'em too.

If anyone doesn't it's not the end of the world, but, particularly if it's not, particularly different project, it just, it would be interesting to talk to everyone. It's things like finding out where they get their, sort of, authority, effectively, to do stuff, from. And if it's, legal, or it's government or it's... you know. There, like almost their, qualifications that kind of thing. It's stuff like that, like where do they get their sort of knowledges from that they bring to this, what, like previous projects have they done to do with, that feature... that sort of thing, I think, almost historical stuff.

Well all of these people, so this g- Architects'll be RIBA (Royal institute of British architects) These'll be CIBSE, I don't know what the ecologists are... Landscape's'll be RIBA, as well, QS'll be RICS. We're usually RICS or em, CIOB. So they'll be all the professional ones, and they'll get a, you know they'll do a degree, and then, so you do your degree, in structural engineering, or Quantity Surveying or whatever, and you'll get from whatever university you're doing them, and then you'll do a year's worth or, architects are slightly different, but you'll do a year, post-degree of experience based, and you'll do a diary and then you go and do a professional exam and the end that period or whenever you choose you want to do it. You do a professional exam, and, an interview and then the, one of these bodies, accepts you, and says "Yeh, we think you're good enough and we'll give you that qualification". So that's the formal qualification part and whether we're, up this, at the outset, and we're looking to employ people, the thing that we're looking for and marking in submissions is that they are a member of a professional organisation. These guys are very poor at it, because a lot of these guys

learnt on the job, that's not to say they're not good, because they usually are good but they don't go the next step then, and actually get that qualification. So I know these guys, like, engineers, services engineers are a pain in the arse... And then, erm, and then it's just a matter of how many years you've got, and what, people have asked me before, you know when they're just starting out doing their stuff and my view is just, completely, between, or up to 30, in terms of age, these qualifications mean everything, and you've got a bit of experience that goes back. Once you're past 30, and you've got, then a fair bit of experience, that goes back and you can, describe that experience, then, the qualification means less and it's, what your experience is, means more. That's just my view, because you'll find that people who're, taking a lead on a, say an engineering design from student accommodation is completely different to taking a lead on a lab building. They all start with this basic understanding down at this end and they have this basic knowledge about fluid dynamics and hydraulics and all of that stuff and that's great, but unless you see a building actually coming together and the challenges you get. I mean on things like this, and the size, they'll be different sizes and different parameters that these operate in. The technical literature will clearly tell you, "yay or nay" and whether it'll do it or not, but there's an element of experience in picking one of these, this is just one example, that you need, that will tell you in theory how to work it out and it'll come up with an answer but the experience is saying "Well, I know that this one will do the job". So it's kind of the, I think it's the experience once you get past that... 30, I think it's 30, I dunno. I think it's just, more important then at that point.

Hmm, yeh that's, my life, spending 10 years at university just taught me, if it's taught me anything that there is no substitute for experience, at all.

Unfortunately not...

You meet far more competent people that clean the showers than all the people you find with degrees and stuff. It's just, it's funny...

Yeh, cool.

Anyway, that's, just over my hour so thank you very much for your time.

Appendix 4: **Sample Field Diary**

Sub-contractor meeting

18th of July, 2016: 1:30pm

Blackdale Meeting room:

Housekeeping:

The Air conditioning is on today, but otherwise the room itself is the same as yesterday. In attendance are [RGCarters], [Briggs & Forrester], [Deane], [LSI] and [Hoare Lea] with several still missing. Specifically the main 'problem company' [Titan] not sending a representative. [RGCarters] are ringing around to chase those who aren't here yet, and make sure that they're coming.

Snagging:

Since it's nearing the end of construction, snagging is well underway and is expected to be complete by the end of the week, at least for the companies present here. Snagging is taking place while the last bits of construction are also going on which means two problems:

1. The rate of snagging is dependent on the rate at which rooms are finished, there are currently only two floors (of four) done.
2. Having to lock off flats that have been snagged to stop people either damaging them further or using components from those rooms to fix others.

Apparently someone has to snag the exterior as well, [LSI] have checked all the cladding panels that are up so far for defects. They have to do it from the ground which seems a bit mad to me but then it's probably less trouble that getting 'working at height' certification. [Briggs] are planning to have their labour force out by the end of the month, which seems unlikely since it seems the building's full of leaks. They're currently testing its air tightness to make sure the insulation works properly. It looks like all sockets are going to need sealing as well as putting boxes on the backs of them to stop leaks. I never knew before coming here that people could be so passionate about clean/white silicon sealant. Not even close to the first time there's been an argument about it even just in front of me.

Central building:

Coming out of the last SL meeting (SLMtg10) there's been a request for disabled toilets and powered doors going into the central café building. Building 57 (Julian Study Centre) sets a precedent for the campus that has to be followed now. They're connecting the district heating system too.

Main buildings:

There's still lots to be done. Splashback panels in the kitchens are mostly in, 7 left to go. There's a question about provision of toasters. There are still three doors missing. Some of the lights in the rooms seem to have gone missing. Someone tried to get away with not painting behind the radiators, so that still needs to be done. The ceiling tiles aren't in yet but aren't going in until the 1st, when we're assuming no one will need the suspended ceilings any more for M&E.

The soffits and fascias are still up in the air. There's an argument over people moving the scaffolding around. It's being used by different people for different things and the services guys from [Briggs] are in conflict with the painters.

The additional exterior elements are starting get rolling too. The external lights are up, pending go-ahead from security. There are bat boxes and the cycle sheds are taking shape. Cow drive is getting re-done as part of the deal with planning. For some reason this seems to be a surprise to some people. The asphalt is going down next and they'll be sorting out the columns (literally, speed bumps) alongside that. There still needs to be confirmation from Security about where cameras are going to go to protect that space.

[Briggs & Forrester] are doing 'toolbox talks'. They're just low-key meetings to make sure that the subbie managers have definitely told their guys that specific things need to be done in future. Specifically, they need to open up taps and leave them open while the water's off to prevent air locks and damage to piping when it goes back on again. Not at the moment thought as they're chlorinating the system and probably best not to kill everyone. Also something about bitumastic paint, which sounded exciting, and having looked it up is for waterproofing, which makes sense.

The last day for these guys is set to be the 22nd of August, which gives everyone else a week to clean up and polish everything before handover.

Main practices:

- Coordinating when sub-contractors are in to do different things. Currently they're looking at timing between putting in ducting and flooring for the corridors, to make sure that the one is finished before the other goes on top.
- Its not just coordinating the labour but making sure the supply of materials is happening at the right time. Blackdale's big but it doesn't have a great deal of space for storage and every day materials sit around they're costing someone money and risking being damaged.
- Control of space available for practice is important, again in coordination of such a big project. Managers have to know where and when everything is happening. Not one omniscient character but everyone working together.
- Negotiation is a key part of this process. Everyone speaks 'builder', which is obviously to be expected but is interesting as a performance variation since [RGCarter] don't still talk like that when talking to [UEA] and [REAL]
- Risk management/Reporting is standard practice for project management but it's nice to see [RGCarter] sourcing their information directly from the guys on site. When saying it's part of Visioning practice it suggests that its someone imagining problems rather than talking to subbies. Bit of Reflexive Governance there...

Interesting elements:

- Note taking, everyone's got notebooks, in the age of the smartphone. They do have the advantage that you can draw in them rather than just write words I suppose.
- Schematics/Schedules are getting passed around. Interesting how everything happens within them even as they're being re-made all the time. [UEA] passes down spec.s, spec.s go through [RGCarter] and come out as BDesign for the subbies to follow.
- Lifts (Cherry-pickers/Scissors) cause some consternation. Partly because there's limited numbers of them, partly because they always seem to be used by the most reckless sub-contractors but mostly just because they're tied up with a ton of H&S.

Appendix 5: Fieldwork codes

The Blackdale Projects:

Domestic Nexus:

1. Cooking
2. Washing/Showering
3. Study
4. Entertainment
5. Socialising
6. Sleep
7. Recycling
8. Heating
9. Lighting
10. Cleaning
11. Laundry
12. Energy Efficiency
13. Greater Consciousness
14. Smoke
15. Flat Viewing

Maintenance/Management:

1. Security
2. Cleaning
3. Maintenance
4. Waste Management
5. Marketing/Administration
6. Helpdesk
7. BMS Operation
8. Energy monitoring
9. Refurbishment

Construction:

1. Superstructure
2. Substructure
3. MEP
4. Man Management
5. Outfitting
6. Landscaping
7. Commissioning
8. Disabled access provision
9. Signage

Construction administration:

1. Administration
2. Contract management
3. Practice co-ordination (Sub-contractors)
4. QS
5. Procurement

Project administration:

1. Monitoring
2. Reporting
3. Consultation
4. Assessment
5. Risk Management
6. Authentication
7. Recognition

Relationship management:

1. Consultation
2. Codification
3. Vetting

On-going learning:

1. Information gathering
2. Dissemination
3. Data curation
4. Data synthesis

BIM

1. Model building
2. Data centralisation
3. Archiving

Soft Landings

1. Strategic planning
2. Facilitated discussion
3. Site familiarisation
4. Witnessing
5. Information management
6. Data collation
7. Document Production
8. Information dissemination

DDesign:

1. Visioning
2. Specification
3. Visualisation
4. Consultation
5. QS
6. Value engineering
7. Practice curation

BDesign:

1. Visioning
2. Visualisation
3. Consultation
4. Design production
5. QS
6. Practice curation
7. Practice recruitment

Regulation:

1. Planning
2. Building regs
3. Consultation/Testing
4. Inspection
5. Commissioning

Financing:

1. Cost analysis
2. Risk analysis
3. Demand analysis
4. Option appraisal

Building regulations:

1. Specification
 - Minimum standard setting
 - Fire/safety standards
2. Monitoring
3. Inspection
4. Commissioning
5. Amendment
 - Expert feedback

Planning Policy:

1. Scoping
2. Assessment
3. Specification
4. Information management
5. Risk Management
6. Inspection
7. Consultation
8. Amendment
 - Expert consultation

University policy development:

1. Visioning
2. Target setting
3. Consultation
4. Refurbishment
5. Procurement
6. Monitoring
7. Commissioning
8. Information management
9. Risk management

Student Experience:

1. Consultation
2. Financing

Design Guide production:

1. Specification
2. Standardisation
3. Life cycle analysis
4. Stakeholder engagement
5. Monitoring

Professional Organisations:

1. CPD training
2. Conferences
3. Recognition
4. Authentication (Chartering)

H&S:

1. Specification
2. Monitoring
3. Reporting

Instances of Sustainability:

Environmental

1. Carbon reduction
2. Resource conservation
3. Protecting biodiversity

Relationship

1. Communication
2. Closer social ties
3. Homogeneity of goals

Systemic

1. Cultural visioning
2. Cohesive planning
3. Zoning

Operational

1. Maintaining resources
2. Waste management
3. Stabilising of existing practice

Economic

1. Harmonious completion/handover
2. Budgetary
3. Avoid asset standing

Lifecycle

1. Lowering maintenance costs
2. Extending operational lifespans
3. Extended Visioning

Practices of Governance:

Visioning:

1. Scoping
2. Consultation
3. Specification
4. Risk analysis

Intervention:

1. Element curation
2. Practice curation
3. Practice co-ordination

Monitoring:

4. Observation
5. Assessment
6. Commissioning

Feedback:

7. Data curation/synthesis
8. Reporting
9. Risk Management

Appendix 6: Standard Consent Form



Interview Number:

Participant anonymised identifier:

CONSENT FORM

Title of Project: Governance of Systems of Social Practice for Sustainability

Name of Researcher: James Graham









Please initial box










1. I confirm that I have understood the information provided to me as to the purpose and methods of the above study/project and have had the opportunity to ask questions.
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason.
3. I understand that if I do withdraw any data already collected about my practice will continue to be used in the study
4. I understand that the research data may be accessed by researchers working at or in collaboration with the School of ENV at UEA in related ethically approved studies but that at all times my personal data will be kept confidential in accordance with data protection guidelines.
5. I agree to take part in this study

Name of Participant Date Signature

Name of Researcher Date Signature

Appendix 7: UEA 2016 Contractor Framework KPIs

Contractor Framework 2016		Contractor Team		 PROJECTS AND ESTATES DEVELOPMENT		Contractor:			
Key Performance Indicators						Name of Assessor:			
	Description	Date of KPI record	Definition	Break Down	Assessor Comments	Actual duration of the construction process (in working days)	The anticipated duration of the construction process at the stage of appointing the contractor (in working days)	Agreed extensions of time (in working days)	Score
KPI-1	 Time predictability		Calculation: (The actual duration of the construction process (incl. design work where appropriate) at Practical Completion) less (The anticipated duration of the construction process as per the contract programme plus agreed extensions of time), expressed as a percentage. Note: If this particular KPI review occurs any time prior to PC then the KPI's are to be used as per break down:	80%-100% A programme has been produced and accurately reported against, with the timely provision of information and discussion of all issues that may affect the contracted completion date, all in a collaborative and open manner. 60%-79% Some issues surrounding time predictability but with no significant impact on the client. 40%-59% Significant issues and questions surrounding control of the programme with potential major impacts to the client. 20%-39% Fundamental issues around the management of the programme and the timely dissemination of information to the client with resulting potential unresolvable issues for the client. < 20% Catastrophic failure with regards to the contractors management of the construction programme and time related information. Possible suspension from the Framework whilst this is investigated more thoroughly.	Project was delivered on time - please see section 5 Close out Minutes				#DIV/0!
KPI-2	 Cost predictability		Calculation: (Actual cost of the construction process (incl. design where appropriate) at agreement of the final account) less (the anticipated cost of the construction process (incl. design where appropriate) at the stage of the appointment of the contractor (not incl. valid client led variations)), expressed as a percentage of the anticipated cost of the construction process at the stage of appointing the contractor. Example: where the actual cost of construction was £38,000 and the anticipated construction was £30,000 but there were £2,000 of client led variations the formula is $((£38,000 - £30,000 - £2,000) / £30,000) = 80\%$	*80%-100% All costs have been agreed equitably and in a timely manner underpinned by collaboration and transparency. *60%-79% Some issues surrounding costs but with no significant impact on the client. *40%-59% Major issues and questions surrounding costs with major impact on the client. *20%-39% Significant issues drawing the integrity of the contractor into question. < 20% Possible suspension from the Framework whilst this is investigated more thoroughly.	Final account was agreed - please see section 4 close out minutes				#DIV/0!
KPI-3	 Fair payment through the supply chain		Spot checks (an audit) of the supply chain will be undertaken. For every day a due payment is found to be late, 30 days from the date on the certificate, for any member of the supply chain (without good supporting evidence for the reason of late payment) 1% will be deducted from a total score of 100%. Any findings of late payment will be discussed with the Contractor prior to a KPI score being given.		Those companies within the supply chain that were asked advised that they had been paid in a timely manner				0.00%
KPI-4	 Defects		A defect shall be defined as anything not in accordance with the Employers Requirements and Contractors Proposals. The condition of the product/facility with respect to defects at the time of handover are to be recorded using the following guidelines:	100% Defect Free 80%-99% Some defects with no significant impact on client 60%-79% Some defects with some impact on client 40%-59% Major defects with major impact on client 20%-39% PC not achieved due to major defects < 20% possible suspension from the Framework whilst this is investigated more thoroughly.	Some defect were apparent on completion, these however did not have an impact on the client				0.00%
KPI-5	 H&S / Welfare		Spot checks will be carried out on all projects. A representative of the client will ask to see the appropriate risk assessments and method statements (RAM's) and a score given according to the following findings. Where more than one spot check is undertaken an average of the scores will be taken to inform the final KPI score.	100% Works are in accordance with the RAM's and no other contravention observations have been made. 80%-99% Minor observations made that were immediately corrected. 60%-79% Observations of multiple items that were not in accordance with the RAM's and could not be rectified there and then. 40%-59% Major concerns that required escalation to the upper management of the contractor. <40% Serious H&S contraventions that required immediate action / stopping of activities and/or reporting to the HSE. Possible suspension from the Framework whilst this is investigated more thoroughly.	Minor observation were noted that were immediately corrected. Further improvements can be made as noted in Section 6 of the Close out report				0.00%
KPI-6	 Client satisfaction		The Client will generally be defined as the "end user" or their representative. We are looking here for contractors that are fully engaged with the client, and the wider team, with good communications and were able to demonstrate their ability or willingness to go that "extra mile", providing right first time solutions and installations. How satisfied was the client with the finished product/facility, where:	80%-100% Very satisfied. 60%-79% Mostly satisfied. 40%-59% Satisfied but with qualified reservations. 20%-39% Mostly dissatisfied. <20% Greatly dissatisfied, possible suspension from the Framework whilst this is investigated more thoroughly.	All works carried out in a professional manner with no major issues				0.00%
KPI-7	 The Environment & Sustainability		This KPI is only used where BREEM or other recognised Environmental measure is not used. If BREEM has been adopted for the project then this KPI will not be used. What levels of environmental/sustainability protection and/or enhancement were adopted for the duration of the project?	80%-100% A demonstrable innovative and excellent approach to the environment and wider sustainability principles, above and beyond best practice. 60%-79% Good environmental practices used, with no local negative environmental impacts. General to strong application of wider sustainability principles (environmental, ethical/social and economic balance). 40%-59% Acceptable integration of sustainable principles within project operations and strategy. Acceptable consideration of reducing environmental impact. 20%-39% Poor consideration of environmental and/or ethical/social elements of the project. Low levels of environmental protection beyond legal compliance. < 20% Unacceptable; possible suspension from the Framework whilst this is investigated more thoroughly.	This requires further discussions on future projects to ensure environmental considerations are taken into account.				0.00%
Total Contractors Team KPI Score =									#DIV/0!
Date:	Assessors Name:			Signature:					
Date:	Name of contractors representative: position within company			Signature:					

Contractor Framework 2016		Client Team		 		Contractor:	
Key Performance Indicators		Description	Date of KPI record	Definition	Break Down	Assessor Comments	Name of Assessor:
KPI-1		Payment Time		How satisfied were you with the time taken for payment?	80%-100% Excellent; all payments were made very promptly. 60%-79% Good; all most all payments were made within contract timescales but on a few occasions they required chasing . 40%-59% Acceptable; some payments were not made within contract timescales and we had to chase for payment on more than one occasion. 20%-39% Poor; many payments were made late. < 20% Unacceptable; Most or all payments made late.		Score
KPI-2		Information Time		How Satisfied were you with the time taken to issue information? & was the RFI schedule responded to in a timely manner?	80%-100% Excellent; all information was issued promptly within agreed dates. 60%-79% Good; All information was issued within agreed dates. 40%-59% Acceptable; Some information was issued late but with no or very limited impact on programme. 20%-39% Poor; Some design information was issued late and this did or will impact on the programme. < 20% Unacceptable; Significant design information was issued late with a major impact on the programme.		
KPI-3		Information Quality		How satisfied were you with the quality of the information received? & were the quality of the RFI responses appropriate and helpful?	comprehensive. 60%-79% Good; Generally accurate, clear and complete. 40%-59% Acceptable; Some of the design information issued had errors, but there was no or very little impact on the programme. 20%-39% Poor; Several errors or omissions, with one or more having a significant on the project. < 20% Unacceptable; Many fundamental errors or omissions.		
KPI-4		Project Management		How satisfied were you with the way in which the Client Team managed and administered the project?	80%-100% Excellent; Equitable, proactive and with a fully collaborative approach. 60%-79% Good; Generally reasonable with a collaborative approach. 40%-59% Acceptable; But sometimes tended towards a more "traditional" approach. 20%-39% Poor; Generally "traditional", sometimes adversarial approach. < 20% Unacceptable; Adversarial approach, not at all collaborative.		
KPI-5		Agreeing Costs		How satisfied were you with the process for agreeing costs associated with change management and risks?	80%-100% Excellent; A proactive and collaborative approach. Costs were agreed promptly with fair outcomes. 60%-79% Good; Generally adopting a collaborative approach with reasonable timescales and outcomes. 40%-59% Acceptable; Timescales and outcomes adequate but could be improved. 20%-39% Poor; Sometimes adversarial. Slow process with some poor outcomes. < 20% Unacceptable; Adversarial approach. Unacceptable timescales and /or outcomes.		
KPI-6		Collaborative Approach		Was the Client Team and their stakeholders open and willing to address project issues jointly? Did the team have a proactive approach to finding solutions?	80%-100% Excellent; A proactive and collaborative approach. 60%-79% Good; Generally adopted a collaborative approach with reasonable timescales and outcomes. 40%-59% Acceptable; Tendency towards a "traditional" approach. Timescales and outcomes adequate but could be improved. 20%-39% Poor; "Traditional" approach, sometimes adversarial. Slow process with some poor outcomes. < 20% Unacceptable; Adversarial approach. Unacceptable timescales and /or outcomes.		
KPI - 7		Overall Performance		Overall, how well did the Client Team perform?	80%-100% Excellent; A proactive and collaborative approach. 60%-79% Good; Generally a collaborative approach was adopted with reasonable timescales and outcomes. 40%-59% Acceptable; Timescales and outcomes adequate but could be improved. 20%-39% Poor; Slow processes with some poor outcomes. < 20% Unacceptable; Adversarial approach. Unacceptable timescales and /or outcomes.		
Total Contractors Team KPI Score =							0.00%
Date:		Assessors Name:			Signature:		
Date:		Name of contractors representative:			Signature:		
Date:		position within company			Signature:		

Appendix 8: BREEAM Certification

Names and Identifiers redacted

Appendix 8

BREEAM® UK

Code for a Sustainable Built Environment
www.breem.com

Final Certificate

The assessment of:

UEA Blackdale Student Accommodation
University of East Anglia
Earlham Road
Norfolk
NR4 7TJ

has been carried out according to Technical Manual:
BREEAM New Construction 2014
Multi-Residential Accommodation
New Construction (Fully Fitted)
and based on the Assessment Report produced by:
Ingleton Wood LLP
has achieved a score of **72.9%**

Excellent

Certificate Number: **BREEAM-0060-0007**

Issue: **01**

BRE Global Limited is accredited by UKAS. The assessment process is certified by BRE Global Limited in accordance with the requirements of Scheme Document SD123

<p>04 April 2018 Date of Issue</p> <p>_____ Signed for BRE Global Ltd.,</p> <p>LSI Architects Architect</p> <p>_____ Developer</p> <p>RG Carters Principal Contractor</p> <p>Briggs and Forester Building Services</p>	<p>University of East Anglia Client for the Assessment</p> <p>_____ Licensed Assessor</p> <p>_____ Assessor Number</p> <p>University of East Anglia Building end user/occupier</p> <p>_____ Project Manager</p> <p>_____ BREEAM Accredited Professional</p>
--	---

SD123 Cert. No. BREEAM-0060-0007

This certificate is issued to the Licensed Assessor Organisation named above based on their application of the assessment process in accordance with Scheme Document SD123.
This certificate is valid on the date of issue on the basis of the data provided by the client and verified by the Assessor Organisation.
To check the authenticity of this certificate visit www.greenbooklive.com/check, scan the QR Tag or contact us: E: breem@bre.co.uk T: +44 (0)333 321 8811
This certificate remains the property of BRE Global Limited and is issued subject to terms and conditions available at www.greenbooklive.com/terms.
The use of the UKAS accreditation mark indicates accreditation in respect of those activities covered by the Accreditation Registration Number 0007, which can be verified by visiting www.ukas.com
BREEAM is a registered trademark of BRE (the Building Research Establishment Ltd. Community Trade Mark E577851)

BF1227 Rev 2.0Page 1 of 2© BRE Global Ltd, 2017

Final Certificate Number: BREEAM-0060-0007

Issue: 01

UEA Blackdale Student Accommodation
University of East Anglia
Earlham Road
Norfolk
NR4 7TJ

Assessed for: University of East Anglia

by: Ingleton Wood LLP

Assessor Company



Licensed Assessor

Assessor Number

BREEAM New Construction 2014
Multi-Residential Accommodation
New Construction (Fully Fitted)

Overall Score: 72.9%

Rating: Excellent



Category Scores

	0	10	20	30	40	50	60	70	80	90	100
Management											95
Health and Wellbeing											50
Energy											65
Transport											89
Water											63
Materials											71
Waste											63
Land Use and Ecology											60
Pollution											69
Innovation											40

Signed for BRE Global Ltd.,

04 April 2018
Date of Issue



This certificate is issued to the Licensed Assessor Organisation named above based on their application of the assessment process in accordance with Scheme Document SD123.
 This certificate is valid on the date of issue on the basis of the data provided by the client and verified by the Assessor Organisation.
 To check the authenticity of this certificate visit www.greenbooklive.com/check, scan the QR Tag or contact us: E: breeam@bre.co.uk T: +44 (0)333 321 8811
 This certificate remains the property of BRE Global Limited and is issued subject to terms and conditions available at www.greenbooklive.com/terms
 The use of the UKAS accreditation mark indicates accreditation in respect of those activities covered by the Accreditation Registration Number 0007 which can be verified by visiting www.ukas.com
 BREEAM is a registered trademark of BRE (the Building Research Establishment Ltd. Community Trade Mark E5778551)



SD123 Cert. No. BREEAM-0060-0007

Appendix 9: Schatzki and Macrorie Practice Relations

Paper	Relation between practice	Definition
Schatzki 2012 - Spaces of Practices and Large Social Phenomena	Causality	Take two prominent forms: Activities altering the world, and entities and the events befalling them inducing activities
	Prefiguration	The difference that the present makes to the nascent future.
	Constitution	Arrangements constitute practices either when they are essential to these practices or are pervasively involved with them over a swath of space-time.
	Intentionality	Through both the thoughts and imaginings participants have about them and the actions they perform toward them (including using them).
	Intelligibility	Arrangements having meaning for — being intelligible as such and such to — participants in a practice.

Paper	Relation between practice	Definition
Macrorie 2015 - Reconstructing Low-energy house using 'systems of practice'	Cascading	A succession of outcomes is induced through practice linkage, each of which triggers or initiates the next stage in the process
	Chaotic	A set of practices connect/relate in an unplanned way, producing unanticipated effects
	Constitutive	One or more practices make-up a bundle/complex or system of practice
	Contingent	One or more practices rely on the performance of another practice
	Competitive	Contest between different practices occurs in pursuit of greater time, space, resources, and/or practitioners
	Cooperative	Practices work jointly to capture greater time, space, resources, and/or practitioners
	Creative/ Enabling	Links between practices purposely created/ encouraged to commence/ speed-up production of a particular outcome
	Demonstrating	Previously formed configurations of practice are purposely reformed to recruit new carriers and to disseminate particular modes of doing
	Destructive/ Prohibitive	Links between practices are purposely broken/ limited to cease/slow down production of an outcome
	Emergent	As practices are linked into bundles, complexes and systems, new "characteristics" result "which cannot be reduced to the individual practices of which they are composed" (Shove et al., 2012 p87)
	Experimental	Previously unmade connections are purposely formed between practices in an exact way, which is studied to determine the outcome of producing these new relations
	Standardising	The faithful reproduction of practices occurs according to a specific set of interconnections
	Reinforcing	The stability of the configuration of practices is enhanced

Bibliography

Abercrombie, N., Hill, S. and Turner, B.S., 1984. *The Penguin dictionary of sociology*. Penguin Books,.

Adapt+, 2016. *Accolades for the Enterprise centre*, University of East Anglia, Accessed online at: <https://www.uea.ac.uk/adapt/the-enterprise-centre/awards-for-the-enterprise-centre>

Adger, W.N. and Jordan, A. eds., 2009. *Governing sustainability* (pp. 3-31). Cambridge: Cambridge University Press.

Alcott, B., Giampietro, M., Mayumi, K. and Polimeni, J., 2012. *The Jevons paradox and the myth of resource efficiency improvements*. Routledge.

Alexander, S., 2014. *A critique of techno-optimism: Efficiency without sufficiency is lost*. Melbourne Sustainable Society Institute, Working Paper (WP), 1, p.14.

Alexander, P., Brown, C., Arneeth, A., Finnigan, J., Moran, D. and Rounsevell, M.D., 2017. *Losses, inefficiencies and waste in the global food system*. *Agricultural systems*, 153, pp.190-200.

Ali, S. and Kelly, M., 2004. *Ethics and social research*. *Researching society and culture*, 2, pp.116-127.

Anderson, K. and Bows, A., 2011. *Beyond 'dangerous' climate change: emission scenarios for a new world*. *Philosophical Transactions of the Royal Society of London A: Mathematical, Physical and Engineering Sciences*, 369(1934), pp.20-44.

Arrhenius, S., 1896. XXXI. *On the influence of carbonic acid in the air upon the temperature of the ground*. *The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science*, 41(251), pp.237-276.

Associated Press, The, 2018. "UN Chief: World Must Prevent Runaway Climate Change by 2020", *The New York Times*, Accessed online at: <https://www.nytimes.com/aponline/2018/09/10/world/ap-un-united-nations-climate-change.html>

Banister, D., 2011. *Cities, mobility, and climate change*. *Journal of Transport Geography* 19 (6), 1538–1546.

- Barna, S., 2013. Greening tomorrow's leaders: developing sustainability teaching across disciplines at UEA, University of East Anglia, Accessed online at: <https://portal.uea.ac.uk/documents/6207125/8480269/uea-teaching-fellowship-final-report-2012-stefi-barna.pdf/02496965-59ba-48d4-9d2f-64589e68f0f8>
- Barr, S., 2006. Environmental action in the home: Investigating the 'value-action' gap. *Geography*, pp.43-54.
- BBC, 2003. 'Dramatic' UEA buildings may be listed, BBS News, Accessed online at: <http://news.bbc.co.uk/1/hi/england/norfolk/3134502.stm>
- Behavioural Insights Unit, 2010. MINDSPACE Behavioural Economics, Accessed online at: <http://www.instituteforgovernment.org.uk/our-work/better-policy-making/mindspace-behavioural-economics>
- Bernard, H.R., 2017. *Research methods in anthropology: Qualitative and quantitative approaches*. Rowman & Littlefield.
- Blackdale FAQs PDF, 2015. Frequently Asked Questions, University of East Anglia Communications Office, Accessed online at: <https://www.uea.ac.uk/documents/6207125/6269352/Blackdale+FAQs-PDF.pdf/7d2f76a7-230a-4a79-827b-7f5f442d1c45>
- Bourdieu, P. and Nice, R., 1977. *Outline of a Theory of Practice (Vol. 16)*. Cambridge: Cambridge university press.
- Browne, A.L., 2016. Can people talk together about their practices? Focus groups, humour and the sensitive dynamics of everyday life. *Area*, 48(2), pp.198-205.
- Brundtland, G., Khalid, M., Agnelli, S., Al-Athel, S., Chidzero, B., Fadika, L., Hauff, V., Lang, I., Shijun, M., de Botero, M.M. and Singh, M., 1987. *Our common future: Report of the 1987 World Commission on Environment and Development*, Oxford, Oxford University Press.
- Brundtland, G.H., 1987. What is sustainable development. *Our common future*.
- Bulkeley, H., Watson, M. and Hudson, R., 2007. Modes of governing municipal waste. *Environment and planning A*, 39(11), pp.2733-2753.
- Bunn, R., 2014. Soft landings framework. Tech. Rep. No. BG 54/2014). BSRIA.

Butler, C., Parkhill, K.A. and Luzecka, P., 2018. Rethinking energy demand governance: Exploring impact beyond 'energy' policy. *Energy research & social science*, 36, pp.70-78.

Carbon Tracker Initiative, 2011. *Unburnable Carbon: Are the world's financial markets carrying a carbon bubble*. Carbon Tracker Initiative

Carson, R., 1962. *Silent Spring*. Greenwich, Connecticut.

Cartwright, N. and Hardie, J., 2012. *Evidence-based policy: a practical guide to doing it better*. Oxford University Press.

Cato, M.S., 2012. *Green economics: an introduction to theory, policy and practice*. Routledge.

Cetina, K.K., 2003. From pipes to scopes: The flow architecture of financial markets. *Distinktion: Scandinavian Journal of Social Theory*, 4(2), pp.7-23.

Cetina, K.K., Schatzki, T.R. and Von Savigny, E. eds., 2005. *The practice turn in contemporary theory*. Routledge.

Chapman, L., 2007. Transport and climate change: a review. *Journal of Transport Geography* 15 (5), 354–367.

Chilvers, J. and Kearnes, M. eds., 2015. *Remaking participation: Science, environment and emergent publics*. Routledge.

Clark, W.C., 2003. *Sustainability science: Challenges for the new millennium*. University of East Anglia, Norwich UK (An address at the official opening of the Zuckerman Institute for Connective Environmental Research.

Cole, L. and Wright, T., 2003. *Assessing sustainability on Canadian University campuses: development of a campus sustainability assessment framework*. Unpublished master's thesis, Royal Roads University, Victoria, BC.

Collins, M., Knutti, R., Arblaster, J., Dufresne, J.L., Fichefet, T., Friedlingstein, P., Gao, X., Gutowski, W.J., Johns, T., Krinner, G. and Shongwe, M., 2013. *Long-term climate change: projections, commitments and irreversibility*.

Craik, K.H., 1973. Environmental psychology. *Annual review of psychology*, 24(1), pp.403-422.

Crang, M., 2003. Qualitative methods: touchy, feely, look-see?. *Progress in human geography*, 27(4), pp.494-504.

Croome, D.J., 1990. Building services engineering—the invisible architecture. *Building Services Engineering Research and Technology*, 11(1), pp.27-31.

CRU, 2012. History of the Climatic Research Unit, Accessed online:
<http://www.cru.uea.ac.uk/about-cru/history>

Darsley, C, 2015. Target 2020, UEA Sustainable Ways, Accessed online at:
https://www.uea.ac.uk/documents/3154295/9533899/UEA-Target-2020_web.pdf

Dawson, G., 2011. “Transition Town Totnes: bringing neighbours together to learn to be sustainable and reduce energy use” Accessed online at:
<http://www.ashden.org/blog/transition-town-totnes-bringing-neighbours-together-learn-be-sustainable-and-reduce-energy-use>

Dilley, L.T.M., 2012. Governing pro-environmental behaviour change: a governmentality approach.

Dilley, L.T., 2015. Governing our choices: ‘proenvironmental behaviour’ as a practice of government. *Environment and Planning C: Government and Policy*, 33(2), pp.272-288.

Ding, G.K., 2008. Sustainable construction—The role of environmental assessment tools. *Journal of environmental management*, 86(3), pp.451-464.

Dobson, A., 2003. *Citizenship and the Environment*. Oxford University Press

Dobson, A., 2009. Citizens, citizenship and governance for sustainability. Cited in: Adger, W.N. and Jordan, A. eds., 2009. *Governing sustainability*. Cambridge: Cambridge University Press. pp.125-141.

Doherty, K.L., 2014. *From Alarm to Action: Closing the Gap Between Belief and Behavior in Response to Climate Change*.

Dolan, P., Hallsworth, M., Halpern, D., King, D. and Vlaev, I., 2010. *MINDSPACE: Influencing behaviour for public policy*

Donzelot, J., 1979. *The Policing of Families*, translated by R. Hurley, New York: Pantheon.

- Dormer, P. and Muthesius, S., 2001. Concrete and open skies: architecture at the University of East Anglia, 1962-2000. Unicorn Pr.
- Dryzek, J.S., 2013. The politics of the earth: Environmental discourses. Oxford university press.
- Durand-Daubin, M. and Anderson, B., 2014. Practice hunting: Time Use Surveys for a quantification of practices distributions and evolutions.
- Eisenberger, P.M., Cohen, R.W., Chichilnisky, G., Eisenberger, N.M., Chance, R.R. and Jones, C.W., 2009. Global warming and carbon-negative technology: prospects for a lower-cost route to a lower-risk atmosphere. *Energy & Environment*, 20(6), pp.973-984.
- England, K., 2003. Interviewing Elites: Cautionary Tales about Researching Women Managers in Canada's Banking Industry (pp. 200–212). *Feminist Geography in Practice: Research and Methods*. London: Blackwell.
- ESRC, 2015. ESRC Framework for research ethics, Updated January 2015, Accessed online at: <https://esrc.ukri.org/files/funding/guidance-for-applicants/esrc-framework-for-research-ethics-2015/>
- Faulconbridge, J.R., 2010. Global architects: learning and innovation through communities and constellations of practice. *Environment and Planning A*, 42(12), pp.2842-2858.
- Faulconbridge, J., 2013. Mobile 'green' design knowledge: institutions, bricolage and the relational production of embedded sustainable building designs. *Transactions of the Institute of British Geographers*, 38(2), pp.339-353.
- Finnveden, G. and Moberg, Å., 2005. Environmental systems analysis tools—an overview. *Journal of cleaner production*, 13(12), pp.1165-1173.
- Flyvbjerg, B., 2005. Machiavellian megaprojects. *Antipode*, 37(1), pp.18-22.
- Flyvbjerg, B., 2006. Five misunderstandings about case-study research. *Qualitative inquiry*, 12(2), pp.219-245.
- Fox, N., 2018. Here comes the sun: the evolution of a prosuming project within a social housing estate (Doctoral dissertation, University of Sussex).

- Geels, F.W., 2002. Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Research policy*, 31(8-9), pp.1257-1274.
- Geels, F.W., 2010. Ontologies, socio-technical transitions (to sustainability), and the multi-level perspective. *Research policy*, 39(4), pp.495-510. Giddens, A. (2009). *The politics of climate change*. Cambridge, UK.
- Geels, F.W., 2018. Disruption and low-carbon system transformation: progress and new challenges in socio-technical transitions research and the multi-level perspective. *Energy Research & Social Science*, 37, pp.224-231.
- Global Footprinting Network, 2015. Earth overshoot day: Past overshoot days, Accessed online at: <http://www.overshootday.org/newsroom/media-backgrounder/#8>
- Goh, T., Ang, B.W., Su, B. and Wang, H., 2018. Drivers of stagnating global carbon intensity of electricity and the way forward. *Energy Policy*, 113, pp.149-156.
- Gottschick, M., 2013. Reflexive capacity in local networks for sustainable development: Integrating conflict and understanding into a multi-level perspective transition framework: JEPP reflexive governance. *Journal of Environmental Policy & Planning*, pp.1-22.
- Gram-Hanssen, K., 2010. Standby consumption in households analyzed with a practice theory approach. *Journal of Industrial Ecology*, 14(1), pp.150-165.
- Gram-Hanssen, K., 2011. Understanding change and continuity in residential energy consumption. *Journal of Consumer Culture*, 11(1), pp.61-78.
- Groves, C., 2017. *Remaking Participation: Science, Environment and Emergent Publics*.
- Guest, G., Namey, E.E. and Mitchell, M.L., 2012. *Collecting qualitative data: A field manual for applied research*. Sage.
- Guy, S., 2006. Designing urban knowledge: competing perspectives on energy and buildings. *Environment and Planning C: Government and Policy*, 24(5), pp.645-659.

- Hajer, M.A., 1995. The politics of environmental discourse: ecological modernization and the policy process (p. 40). Oxford: Clarendon Press.
- Halada, K., Shimada, M. and Ijima, K., 2008. Forecasting of the consumption of metals up to 2050. *Materials transactions*, 49(3), pp.402-410.
- Halkier, B. & Jensen, I. 2011. Methodological challenges in using practice theory in consumption research. Examples from a study on handling nutritional contestations of food consumption. *Journal of Consumer Culture*, 11, 101-123.
- Hamilton, I.G., Steadman, P.J., Bruhns, H., Summerfield, A.J. and Lowe, R., 2013. Energy efficiency in the British housing stock: energy demand and the homes energy efficiency database. *Energy Policy*, 60, pp.462-480.
- Hampton, S., 2018. Policy implementation as practice? Using social practice theory to examine multi-level governance efforts to decarbonise transport in the United Kingdom. *Energy Research & Social Science*, 38, pp.41-52.
- Hampton, S. and Adams, R., 2018. Behavioural economics vs social practice theory: Perspectives from inside the United Kingdom government. *Energy Research & Social Science*, 46, pp.214-224.
- Handwerk, B., 2006. Underground 'Fossil Water' Running Out. National Geographic. Accessed online at: <http://news.nationalgeographic.co.uk/news/2010/05/100505-fossil-water-radioactive-science-environment/>
- Hargreaves, T., Nye, M. and Burgess, J., 2010, October. Understanding how householders interact with feedback from smart energy monitors-Opening the black box of the household. In *Geographies of Energy Transition. Seminar (Vol. 3)*.
- Hargreaves, T., 2011. Practice-ing behaviour change: Applying social practice theory to pro-environmental behaviour change. *Journal of consumer culture*, 11(1), pp.79-99.
- Hargreaves, T., Longhurst, N. and Seyfang, G., 2013. Up, down, round and round: connecting regimes and practices in innovation for sustainability. *Environment and Planning A*, 45(2), pp.402-420.
- Hargreaves, T., Wilson, C. and Hauxwell-Baldwin, R., 2018. Learning to live in a smart home. *Building Research & Information*, 46(1), pp.127-139.

Hewitt, N.J., 2015. Building retrofit in the UK—status and challenges.

Higginson, S., McKenna, E., Hargreaves, T., Chilvers, J. and Thomson, M., 2015. Diagramming social practice theory: An interdisciplinary experiment exploring practices as networks. *Indoor and Built Environment*, 24(7), pp.950-969.

Higher Education Academy, 2014. Green Academy 2 Change Programme, Case Study University of East Anglia: Future Skills Initiative, University of East Anglia, Accessed online at: https://www.uea.ac.uk/documents/3154295/9533899/UEA-Future-Skills_HEA-case-study-2014.pdf/dc8bf631-d753-422e-b431-298afaa14198

Hillebrand, H., Brey, T., Gutt, J., Hagen, W., Metfies, K., Meyer, B. and Lewandowska, A., 2018. Climate Change: Warming Impacts on Marine Biodiversity. In *Handbook on Marine Environment Protection* (pp. 353-373). Springer, Cham.

Historic England 2018 University of East Anglia listed buildings, Accessed online at: <https://historicengland.org.uk/listing/the-list/results?q=UEA&searchtype=nhle>

Hitchings, R., 2012. People can talk about their practices. *Area*, 44(1), pp.61-67.

Holdren, J.P. and Ehrlich, P.R., 1974. Human Population and the Global Environment: Population growth, rising per capita material consumption, and disruptive technologies have made civilization a global ecological force. *American scientist*, 62(3), pp.282-292.

Huesemann, M. and Huesemann, J., 2011. *Techno-fix: why technology won't save us or the environment*. New Society Publishers.

Hui, A., 2014. [≠] Manifesto Cited in: *Demanding ideas: where theories of practice might go next*, DEMAND Centre. p7.

Järvensivu, P., Toivanen, T., Vadén, T., Lähde, V., Majava, A., Eronen J.T., 2018. Governance of Economic Transition. In *Global Sustainable, Development Report 2019*. BIOS, Accessed online at: https://bios.fi/bios-governance_of_economic_transition.pdf

Jones, C., Hesterly, W.S. and Borgatti, S.P., 1997. A general theory of network governance: Exchange conditions and social mechanisms. *Academy of management review*, 22(4), pp.911-945.

- Jones, R., Pykett, J. and Whitehead, M., 2011. The geographies of soft paternalism in the UK: the rise of the avuncular state and changing behaviour after neoliberalism. *Geography Compass*, 5(1), pp.50-62.
- Jones, R., Pykett, J. and Whitehead, M., 2013. *Changing behaviours: On the rise of the psychological state*. Edward Elgar Publishing.
- Jordan, A. and Matt, E., 2014. Designing policies that intentionally stick: policy feedback in a changing climate. *Policy Sciences*, 47(3), pp.227-247.
- Juniper, T., 2013. *What has nature ever done for us?: how money really does grow on trees*. Profile books.
- Kareiva, P. and Carranza, V., 2018. Existential risk due to ecosystem collapse: Nature strikes back. *Futures*.
- Kuijer, L., 2014. A call for more practice theory on the future. Cited in: *Demanding ideas: where theories of practice might go next*, DEMAND Centre. p42.
- Kuijer, L. and De Jong, A.M., 2011. Practice theory and human-centered design: A sustainable bathing example. *Nordes*, (4)
- Kuijer, L., 2017. 10 Practices-oriented design. *Design for behaviour change: Theories and practices of designing for change*.
- Krzywoszynska, A., Matt, W., Buckley, A., Chiles, P., Gregson, N., Holmes, H. and Mawyin, J., 2018. Opening up the participation laboratory: The cocreation of publics and futures in upstream participation. *Science, Technology, & Human Values*, 43(5), pp.785-809.
- Latour, B., 2005. *Reassembling the social: An introduction to actor-network-theory*. Oxford university press.
- Levin, K., Cashore, B., Bernstein, S. and Auld, G., 2012. Overcoming the tragedy of super wicked problems: constraining our future selves to ameliorate global climate change. *Policy sciences*, 45(2), pp.123-152.
- Loorbach, D. and Rotmans, J., 2010. The practice of transition management: Examples and lessons from four distinct cases. *Futures*, 42(3), pp.237-246.

- Loibl, M.C., 2006. 11. Integrating perspectives in the practice of transdisciplinary research. *Reflexive governance for sustainable development*, p.294.
- LSI, 2016. UEA Hickling House and Barton House, LSI Architects, Accessed online at: <http://www.lsiarchitects.co.uk/case-studies/uea-hickling-house-barton-house>
- Macrorie, R., 2016. Reconstructing low-energy housing using 'systems of practice' (Doctoral dissertation, University of East Anglia).
- Maller, C. and Strengers, Y., 2014. 9 Resurrecting sustainable practices. Social practices, intervention and sustainability: Beyond behaviour change, p.110.
- Martens, L. D. 2012. Practice 'in talk' and talk 'as practice': Dishwashing and the reach of language. *Sociological Research Online*, 17.
- McCowan, T., 2012. Higher Education and the Profit Incentive. In *Global neoliberalism and education and its consequences* (pp. 74-92). Routledge.
- McGoey, L., 2012. The logic of strategic ignorance. *The British Journal of Sociology*, 63(3), pp.533-576.
- McMeekin, A. and Southerton, D., 2012. Sustainability transitions and final consumption: practices and socio-technical systems. *Technology Analysis & Strategic Management*, 24(4), pp.345-361.
- Menezes, A.C., Cripps, A., Bouchlaghem, D. and Buswell, R., 2012. Predicted vs. actual energy performance of non-domestic buildings: Using post-occupancy evaluation data to reduce the performance gap. *Applied energy*, 97, pp.355-364.
- Mills, J., Bonner, A. and Francis, K., 2006. The development of constructivist grounded theory. *International journal of qualitative methods*, 5(1), pp.25-35.
- Milman, O., 2015. James Hansen, father of climate change awareness, calls Paris talks 'a fraud', *The Guardian*, Sat 12 Dec 2015, Accessed online at: <https://www.theguardian.com/environment/2015/dec/12/james-hansen-climate-change-paris-talks-fraud>
- Morley, J., 2014. Interesting topics & directions for practice theories. Cited in: *Demanding ideas: where theories of practice might go next*, DEMAND Centre. p21.
- DEMAND Centre.

- Murphy, E. and Dingwall, R., 2007. Informed consent, anticipatory regulation and ethnographic practice. *Social Science & Medicine*, 65(11), pp.2223-2234.
- Naus, J., Spaargaren, G., van Vliet, B.J. and van der Horst, H.M., 2014. Smart grids, information flows and emerging domestic energy practices. *Energy Policy*, 68, pp.436-446.
- NBS, 2017. BIM Levels explained, Accessed online at: <https://www.thenbs.com/knowledge/bim-levels-explained>
- Nettleton, S. and Green, J., 2014. Thinking about changing mobility practices: how a social practice approach can help. *Sociology of health & illness*, 36(2), pp.239-251.
- Nicolini, D., 2012. *Practice theory, work, and organization: An introduction*. OUP Oxford.
- Nicolini, D., 2016. Is small the only beautiful? Making sense of 'large phenomena' from a practice-based perspective. In *The Nexus of Practices* (pp. 110-125). Routledge.
- Norman, B. and Steffen, W.C., 2018. Planning within planetary boundaries. In *Sustainable Pathways for our Cities and Regions* (Vol. 20, No. 44, pp. 20-44). ROUTLEDGE in association with GSE Research.
- Pallett, H., 2014. *Organising science policy: participation, learning & experimentation in British democracy* (Doctoral dissertation, University of East Anglia).
- Poortinga, W., Whitmarsh, L. and Suffolk, C., 2013. The introduction of a single-use carrier bag charge in Wales: Attitude change and behavioural spillover effects. *Journal of Environmental Psychology*, 36, pp.240-247.
- Pred, A., 1981. Social reproduction and the time-geography of everyday life. *Geografiska Annaler. Series B, Human Geography*, 63(1), pp.5-22
- Punch, M., 1994. Politics and ethics in qualitative research. *Handbook of qualitative research*.
- Quééré, C.L., Andrew, R.M., Friedlingstein, P., Sitch, S., Pongratz, J., Manning, A.C., Korsbakken, J.I., Peters, G.P., Canadell, J.G., Jackson, R.B. and Boden, T.A., 2018. Global Carbon Budget 2017. *Earth System Science Data*, 10(1), pp.405-448.

- Reckwitz, A., 2002. Toward a theory of social practices: A development in culturalist theorizing. *European journal of social theory*, 5(2), pp.243-263.
- Rhodes, R.A., 1997. *Understanding governance: Policy networks, governance, reflexivity and accountability*. Open university press.
- Rip, A., 2006. A Co-Evolutionary Approach to Reflexive Governance—and Its Ironies. *Reflexive governance for sustainable development*, pp.82-100.
- Røpke, I. and Christensen, T.H., 2012. Energy impacts of ICT—Insights from an everyday life perspective. *Telematics and Informatics*, 29(4), pp.348-361.
- Røpke, I., 2001. New technology in everyday life—social processes and environmental impact. *Ecological Economics*, 38(3), pp.403-422.
- Rose, N., 1999. *Powers of freedom: Reframing political thought*. Cambridge university press.
- Rosling, H., 2010. Global population growth, box by box. TED@ Cannes.
- Rotmans, J. and Kemp, R., 2008. Detour ahead: a response to Shove and Walker about the perilous road of transition management. *Environment and Planning A*, 40(4), pp.1006-1012.
- Routledge, 2018. *Reviews of Remaking Participation: Science, Environment and Emergent Publics*. Routledge, Taylor & Francis Group Accessed online at: <https://www.routledge.com/Remaking-Participation-Science-Environment-and-Emergent-Publics/Chilvers-Kearnes/p/book/9780415857406>
- Royal Institute of British Architects, 2017. *Process: RIBA Plan of Work*, Royal Institute of British Architects, Accessed online at: <https://www.architecture.com/knowledge-and-resources/resources-landing-page/riba-plan-of-work>
- Royston, S., 2016. Invisible energy policy in higher education. In Demand centre conference, Lancaster (pp. 13-15).
- Rydin, Y., 2010. Planning and the technological society: Discussing the London plan. *International Journal of Urban and Regional Research*, 34(2), pp.243-259.
- Schatzki, T.R., 2002. *The site of the social: A philosophical account of the constitution of social life and change*. Penn State Press.

- Schatzki, T.R., 2005. Peripheral vision: The sites of organizations. *Organization studies*, 26(3), pp.465-484.
- Schatzki, T.R., 2006. On organizations as they happen. *Organization studies*, 27(12), pp.1863-1873.
- Schatzki, T.R., 2009. Timespace and the organization of social life. *Time, consumption and everyday life: Practice, materiality and culture*, pp.35-48.
- Schatzki, T.R., 2011. Where the action is (on large social phenomena such as sociotechnical regimes). Sustainable Practices Research Group, Working Paper, 1.
- Schatzki, T. R., 2012. Spaces and Practices of Large Social Phenomena, Alexander von Humboldt Lecture, Accessed online at:
<https://www.youtube.com/watch?v=lma5bDq8uNk>
- Schatzki, T.R., 2015. Spaces of practices and of large social phenomena. *Espaces Temps*, 24(03).
- Schatzki, T.R., 2016. Practice theory as flat ontology. *Practice Theory and Research: Exploring the dynamics of social life*.
- Sendzimir, J., Magnuszewski, P., Balogh, P. and Vári, A., 2006. Adaptive management to restore ecological and economic resilience in the Tisza river basin. *Reflexive governance for sustainable development*, pp.131-161.
- Shove, E., 1998. Gaps, barriers and conceptual chasms: theories of technology transfer and energy in buildings. *Energy policy*, 26(15), pp.1105-1112.
- Shove, E., 2004. Comfort, cleanliness and convenience: The social organization of normality (New Technologies/New Cultures).
- Shove, E., 2007. *The design of everyday life*. Berg.
- Shove, E., 2010. Beyond the ABC: climate change policy and theories of social change. *Environment and planning A*, 42(6), pp.1273-1285.
- Shove, E., 2011. On the difference between chalk and cheese—a response to Whitmarsh et al's comments on "Beyond the ABC: climate change policy and theories of social change". *Environment and Planning A*, 43(2), pp.262-264.

- Shove, E., 2014. Putting practice into policy: reconfiguring questions of consumption and climate change. *Contemporary Social Science*, 9(4), pp.415-429.
- Shove, E., 2015. Linking low carbon policy and social practice. In *Social Practices, Intervention and Sustainability* (pp. 45-58). Routledge.
- Shove, E. and Pantzar, M., 2005. Consumers, producers and practices: Understanding the invention and reinvention of Nordic walking. *Journal of consumer culture*, 5(1), pp.43-64.
- Shove, E., Pantzar, M. and Watson, M., 2012. *The dynamics of social practice: Everyday life and how it changes*. Sage.
- Shove, E. and Spurling, N. eds., 2013. *Sustainable practices: Social theory and climate change*. Routledge.
- Shove, E. and Walker, G., 2007. CAUTION! Transitions ahead: politics, practice, and sustainable transition management. *Environment and planning A*, 39(4), pp.763-770.
- Shove, E. and Walker, G., 2008. Transition Management and the politics of shape shifting. *Environment and Planning A*, 40(4), pp.1012-1014.
- Shove, E. and Walker, G., 2010. Governing transitions in the sustainability of everyday life. *Research policy*, 39(4), pp.471-476.
- Shove, E. and Walker, G., 2014. What is energy for? Social practice and energy demand. *Theory, Culture & Society*, 31(5), pp.41-58.
- Shove, E., Watson, M. and Spurling, N., 2015. Conceptualizing connections: Energy demand, infrastructures and social practices. *European Journal of Social Theory*, 18(3), pp.274-287.
- Silverman, D., 2013. *Doing qualitative research: A practical handbook*. SAGE Publications Limited.
- Silverstone, R., 1993. Time, information and communication technologies and the household. *Time & Society*, 2(3), pp.283-311.
- Smith, A., 2006. Niche-based approaches to sustainable development: radical activists versus strategic managers. *Reflexive Governance for Sustainable Development*, pp.313-336.

- Smith, A. and Stirling, A., 2007. Moving outside or inside? Objectification and reflexivity in the governance of socio-technical systems. *Journal of Environmental Policy & Planning*, 9(3-4), pp.351-373.
- Song, C., Dodds, W.K., Rüegg, J., Argerich, A., Baker, C.L., Bowden, W.B., Douglas, M.M., Farrell, K.J., Flinn, M.B., Garcia, E.A. and Helton, A.M., 2018. Continental-scale decrease in net primary productivity in streams due to climate warming. *Nature Geoscience*, p.1.
- Spaargaren, G., 2011. Theories of practices: Agency, technology, and culture: Exploring the relevance of practice theories for the governance of sustainable consumption practices in the new world-order. *Global Environmental Change*, 21(3), pp.813-822.
- Späth, P., Rohrer, H., Weber, K.M. and Oehme, I., 2006. The transition towards sustainable production systems in Austria—reflexive experimentation. *Reflexive governance for sustainable development*, pp.355-382.
- Spurling, N., 2014. Practice theory and policy intervention. Cited in, *DEMANDing Ideas: Where theories of practice might go next (Working paper)*, DEMAND Centre.
- Spurling, N., 2018. Matters of time: Materiality and the changing temporal organisation of everyday energy consumption. *Journal of Consumer Culture*, p.1469540518773818.
- Spurling, N. and McMeekin, A., 2014. Interventions in practices. *Social Practices, Intervention and Sustainability-Beyond behaviour change*.
- Spurling, N.J., McMeekin, A., Southerton, D., Shove, E.A. and Welch, D., 2013. Interventions in practice: Reframing policy approaches to consumer behaviour.
- Standeven, M., Cohen, R., Bordass, B. and Leaman, A., 1998. PROBE 14: Elizabeth fry building. *Building Services Journal*, 20, pp.37-42.
- Steffen, W., Rockström, J., Richardson, K., Lenton, T.M., Folke, C., Liverman, D., Summerhayes, C.P., Barnosky, A.D., Cornell, S.E., Crucifix, M. and Donges, J.F., 2018. Trajectories of the Earth System in the Anthropocene. *Proceedings of the National Academy of Sciences*, p.201810141.
- Stern, N., 2006. *The economics of climate change*. United Kingdom.

Strengers, Y., 2018. Sustainability futures and the future of sustainable HCI. In Digital Technology and Sustainability (Vol. 231, No. 233, pp. 231-233). ROUTLEDGE in association with GSE Research.

Tanaka, K. and O'Neill, B.C., 2018. The Paris Agreement zero-emissions goal is not always consistent with the 1.5° C and 2° C temperature targets. *Nature Climate Change*, 8(4), p.319.

Taylor, L., Rezai, A. and Foley, D.K., 2016. An integrated approach to climate change, income distribution, employment, and economic growth. *Ecological Economics*, 121, pp.196-205.

Taylor, R.A.J., Herms, D.A., Cardina, J. and Moore, R.H., 2018. Climate Change and Pest Management: Unanticipated Consequences of Trophic Dislocation. *Agronomy*, 8(1), p.7.

Town and Country Planning Association, 2006 'Using the Merton Rule' NBS Accessed online at:

<https://www.thenbs.com/PublicationIndex/documents/details?Pub=TCPA&DocID=290598>

Thaler, R. H., Sunstein, C. R., 2008. *Nudge: improving decisions about health, wealth, and happiness*. Newhaven: Yale.

UEAa, 2015. Low Carbon Campus, University of East Anglia, Accessed online at:

<https://www.uea.ac.uk/about/sustainability/campus/buildings/low-carbon-campus>

UEAb, 2015. UEA 2030 Vision, University of East Anglia, Accessed online at:

<https://portal.uea.ac.uk/arm/uea-vision>

UEAc, 2015. UEA Strategic Vision 2030 and UEA Plan 2016-2020 Timetable, University of East Anglia, Accessed online at:

<https://portal.uea.ac.uk/documents/6207125/8226025/sen14d025dividera.pdf/8c3e9395-4058-41d8-8f25-d7c07ed9f25d>

UEAa, 2016. The Accommodation option with a green difference, University of East Anglia, Accessed online at: <https://www.uea.ac.uk/about/sustainability/get-involved/green-flats>

UEAa, 2017. Royal accolade for ground-breaking environmental science, University of East Anglia, Accessed online at: <https://www.uea.ac.uk/about/-/royal-accolade-for-ground-breaking-environmental-science>

UEAb, 2017. University of East Anglia Financial Statements 2016-2017, University of East Anglia, Accessed online at:

<https://portal.uea.ac.uk/documents/6207125/7082556/2016+17+Financial+Statements+.pdf/8af63bc8-61eb-ce70-fb4a-b25b52284de2>

UEAc, 2017. Maintaining and Developing our Built Environment, University of East Anglia, Accessed online at:

<https://www.uea.ac.uk/about/sustainability/campus/buildings>

UEAa, 2018. University of East Anglia Fast Facts and Rankings, University of East Anglia, Accessed online at: <https://www.uea.ac.uk/about/media-room/facts>

UEAb, 2018. Strategy and Policy: Our sustainability vision, University of East Anglia, Accessed online at: <https://www.uea.ac.uk/about/sustainability/strategy-and-policy>

UEAc, 2018. Current works: Teaching wall maintenance, University of East Anglia, Accessed online at: https://portal.uea.ac.uk/estates/improving-your-campus/current-works/-/asset_publisher/F0wZU8imREei/content/concrete-repairs?inheritRedirect=false&redirect=https%3A%2F%2Fportal.uea.ac.uk%2Festates%2Fimproving-your-campus%2Fcurrent-works%3Fp_p_id%3D101_INSTANCE_F0wZU8imREei%26p_p_lifecycle%3D0%26p_p_state%3Dnormal%26p_p_mode%3Dview%26p_p_col_id%3Dcolumn-2%26p_p_col_count%3D1

UEAd, 2018. The UEA Building Design Guide 2018, University of East Anglia, Accessed online at: <https://portal.uea.ac.uk/estates/building-design-guide>

UK Building Regulations, 2010. The Building Regulations 2010, Accessed online at: <http://www.legislation.gov.uk/uksi/2010/2214/contents/made>

Ullah, H., Nagelkerken, I., Goldenberg, S.U. and Fordham, D.A., 2018. Climate change could drive marine food web collapse through altered trophic flows and cyanobacterial proliferation. *PLoS biology*, 16(1), p.e2003446.

- United Nations, 1992. Agenda 21: Sustainable Development, United Nations Conference on Environment & Development, Accessed online at: <https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf>
- UNFCCC, 1992. Framework Convention on Climate Change. United Nations
- Universities UK, 2013. The funding challenge for universities, Universities UK, Accessed online at: <https://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2013/funding-challenge-for-universities.pdf>
- Universities UK, 2015. Patterns and Trends in UK higher Education, Universities UK, Accessed online at: <https://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2015/patterns-and-trends-2015.pdf>
- Lente, H. V., 2014. Commentary on DEMANDING ideas. Cited in, DEMANDING Ideas: Where theories of practice might go next (Working paper), DEMAND Centre.
- Vassallo, P.L., Yousif, C. and Abela, A., 2018. Performance gap between asset and operational energy performance rating for non-residential buildings.
- Voß, J.P. and Kemp, R., 2015. Sustainability and reflexive governance: introduction. Technische Universität Berlin.
- Voß, J.P., Bauknecht, D. and Kemp, R. eds., 2006. Reflexive governance for sustainable development. Edward Elgar Publishing.
- Wackernagel, M. and Rees, W., 1998. Our ecological footprint: reducing human impact on the earth (Vol. 9). New Society Publishers.
- Walker, G. and Shove, E., 2007. Ambivalence, sustainability and the governance of socio-technical transitions. *Journal of Environmental Policy & Planning*, 9(3-4), pp.213-225.
- Warde, A., 2005. Consumption and theories of practice. *Journal of consumer culture*, 5(2), pp.131-153.
- Watson, M., 2012. How theories of practice can inform transition to a decarbonised transport system. *Journal of Transport Geography*, 24, pp.488-496.
- Watson, M., 2017. Placing power in practice theory. The nexus of practices: Connections, constellations, practitioners, pp.169-182.

- Watson, M. and Shove, E., 2008. Product, competence, project and practice: DIY and the dynamics of craft consumption. *Journal of Consumer Culture*, 8(1), pp.69-89.
- Watts, S., 2014. User skills for qualitative analysis: Perspective, interpretation and the delivery of impact. *Qualitative Research in Psychology*, 11(1), pp.1-14.
- Way, M. and Bordass, B., 2005. Making feedback and post-occupancy evaluation routine 2: Soft landings—involving design and building teams in improving performance. *Building Research & Information*, 33(4), pp.353-360.
- Whitmarsh, L., O'Neill, S. and Lorenzoni, I., 2011. Climate change or social change? Debate within, amongst, and beyond disciplines. *Environment and Planning A*, 43(2), pp.258-261.
- Whitmarsh, L. and Corner, A., 2017. Tools for a new climate conversation: A mixed-methods study of language for public engagement across the political spectrum. *Global environmental change*, 42, pp.122-135.
- Williams, K. and Dair, C., 2007. What is stopping sustainable building in England? Barriers experienced by stakeholders in delivering sustainable developments. *Sustainable development*, 15(3), pp.135-147.
- Wilson, C. and Chatterton, T., 2011. Multiple models to inform climate change policy: a pragmatic response to the 'beyond the ABC' debate. *Environment and Planning A*, 43(12), pp.2781-2787.
- Wingfield, J., Bell, M., Miles-Shenton, D., South, T. and Lowe, R.J., 2008. Lessons from Stamford Brook: understanding the gap between designed and real performance.