Contextualising Critical Design: Towards a Taxonomy of Critical Practice in Product Design

Matthew Malpass

A thesis submitted in partial fulfilment of the requirements of Nottingham Trent University for the degree of

Doctor of Philosophy

September 2012

Abstract

This study focuses on critical design practice. The research challenges the colloquial understanding of 'critical design.' It problamatises, defines and reassesses the concept of 'critical design' situating it among other forms of critical design practice.

The research reviews the field of activity from a historical perspective. It reviews contemporary activity in contexts of design research and the gallery system to establish domain authorities and theoretical perspectives that inform critical design practice. The research draws from a body of literature relating to design theory and critical design practice to identify several important themes by which to discuss the practice.

The research employs a hermeneutic methodology and engages expert 'critical' designers through a series of conversational interviews. The interviews are analysed using code to theory methods of inductive qualitative analysis and subjected to hermeneutic analysis that draws on the extensive contextual review. Salient concepts found in the discourse are extracted, theorised and organised to create taxonomy of critical design practice.

In the taxonomy, the field of critical design practice is categorised by three types of practice: *Associative Design, Speculative Design* and *Critical Design*. These three practices are differentiated by topics addressed in each and further differentiated by the type of *Satire, Narrative* and *Object Rationality* used in each practice.

The original contribution of this research is a *Taxonomy of critical practice in product design*, which consists of a written and visual dimension. The taxonomy acts as a discursive tool to chart design activity and it illustrates the diversity in critical design practice beyond the colloquial understanding of 'critical design'.

The taxonomy presents three distinct types of critical design practice; it outlines the design methods used to establish the critical move through design and identifies the contexts where critical design is practiced. It can be used to compare projects, chart designers' activity over time, illustrate trajectories of practice and identify themes in practice. The taxonomy provides theoretical apparatus to analyse the field. Such analysis contributes towards a discussion on critical design within design studies.

Acknowledgements

Firstly, my thanks go to the School of Architecture Design and the Build Environment Nottingham Trent University for the generous bursary that funded this study.

I would like to thank staff in the CADBE research office and in the Product Design Department at Nottingham Trent for help and support throughout.

For their support and friendship, I would like to thank, Sabine Hielscher, Guy Birkin, David King, Marc Zandy, Amy Bolt and Patricia Lockren. For the opportunities and advice offered during the PhD, my thanks go to Lorraine Gamman, Adam Thorpe, Nick Rhodes, Leslie Arthur, Janet McDonnell and Tom Fisher.

For their enduring support, special thanks goes to Dianne and Paul Malpass, Debbie and Andrew Moss, Rita Lee, Jonathan Malpass and Rebecca Stevenson.

For generously offering their time to participate in the interviews and share their perspectives, my sincerest thanks go to Ralph Ball and Maxine Naylor, Anthony Dunne and Fiona Raby, Noam Toran, James Auger, Tobie Kerridge, Simon Bowen and Ramia Mazé.

Finally, I would like to extend special thanks to Steve Rutherford, Hugh Miller, Jamie Billing and Tracy Cordingley my Director of Studies, for their insight, pragmatism, enthusiasm and guidance as supervisors over the past five years. Thank you!

Contents

List of Figures

Chapter one

Introducing the study and the problem with critical design

1 Introduction

This study developed out of an interest in using product design as a form of inquiry into the misuse and abuse of technological products. I was particularly interested in mobile phone use, the agency of the mobile phone and the affect of the technology at a time in 2005 when news reports were commenting on technological addiction, online social networks were increasing in popularity and mobile phones were getting 'smarter'. Through practice, I explored issues of technological addiction, objects facilitating acts of violence and user anxiety affected by the loss of communication technology. Rather than looking to user centred research and ethnographic methods used in product design, I looked to critical theory and literary composition to produce a series of design proposals. I drew inspiration from designers Dunne and Raby, media artists Natalie Jeremijenko and Krzysztof Wodiczko and post-structuralist theorists Jean Baudrillard and Paul Virilio. I employed mechanisms of juxtaposition and satire in my design process to develop visual resonance and contradictions in the design work intent on provoking discussion through the objects. This was my introduction to critical design.

Consequently, I started to consider a doctoral project. My intention was to deliver methods for commercial product designers to defamiliarise themselves from their everyday practice. With grand and somewhat naive intent, I wanted to encourage designers to approach critical and non-commercially focused briefs addressing broad societal, cultural and political concerns.

My rationale was based on an understanding that product design is an ideological activity that unthinkingly propagates the designer's values into the products they design. Moreover, even though design and interaction with objects has a massive effect on our everyday life, a limited discourse focuses specifically on the effects of design from within the design profession, a claim supported by Miller's dismay of product design:

> It ought to be unimaginable that a profession would spend its entire time concerned with designing the particular form of goods without seeing it as essential to attempt to show what the consequences of that particular design would be. (2001, p. 1)

Prior understanding led me to believe that a critical design method could be developed and packaged as a repeatable, reflective exercise. I thought it important for more designers to embrace the practice by regularly partaking in critical briefs and integrate learning from these projects into their everyday approach to work. I assumed that

critical design could be applied to a commercial design process as a frontend research tool. However, in this context its use becomes a tool to serve orthodox notions of product design that are arguably driven by technological and economic concerns.

My intention to create a 'toolbox' method that challenged commercial practice soon appeared problematic and was reconsidered early in the project for two reasons. Firstly, developing a methodology for critical deign practice de-radicalises the practice. Bringing it into a mainstream commercial product design removes any critical tenure. Secondly, I had misunderstood what the 'critical designers' that I was aware of and based my understanding on were aiming to achieve in their practice.

I assumed that 'critical designers' would want to incorporate their approach into a more mainstream practice. This would encourage other designers to open their thinking to influences beyond essentialist forms of product design grounded in modernist ideals, functionalism and user-led processes. Having tested my assumptions over the course of this PhD, I understand that this is not the case. As often as critical design is positioned as a democratic practice, geared towards debate, it functions as a personal and subjective form of design. It offers means to use product design as a critical language focusing on concerns beyond normal disciplinary bounds. The critical move is established by the voluntary insubordination of design methods. But just as they challenge the discipline's boundaries, in their insubordination critical designers aim to develop a critical tradition that contributes to product design's disciplinary foundation, addressing Thackara's concerns that:

> Because product design is thoroughly integrated into capitalist production, it is bereft of an independent critical tradition on which to base an alternative. (1988, p. 22)

Within this field, a number of practitioners and academics have recognised problems with uncritical design practice. This community mobilises product design as a specifically critical act challenging how mainstream design unthinkingly propagates the values, assumptions, and ideologies inherent in the designer who passively embody these values in products. Critical design is motivated by an impulse to reframe the circumstances surrounding contemporary product design by using modes of investigation, which probe the boundaries of the discipline and challenge the prevailing perception of what product design is, how it operates and what the designer is capable of using product design for.

Unfortunately, formal analysis of this reframing has not kept pace. Often critical design activity is not considered product design. Raby (2008, p. 96) writes that in the majority of instances it is described as art. This claim is further supported in my own experience gained from attending design research colloquiums that address critical design. The discussion with the audience will inevitably result in the question being asked, "isn't it just art?" The lack of analysis and discussion about critical design as a specific form of product design creates an opportunity for design research. A function of thesis is to address the lack of analysis in design research and in particular, in a design studies discourse. The intention here is to advance the debate in critical design practice beyond the question "isn't it just art". In attempting to do this a range of concepts, perspectives and methods that facilitate the operation of critical design are exposed and discussed.

1.1 Challenging colloquialism: the problem with critical design

At the start of this research, it is important to address the colloquial understanding of critical design. The colloquial understanding of critical design goes something like this: The term 'critical design' was coined by Anthony Dunne (1997). It describes a form of practice that he and Fiona Raby developed as research fellows with colleagues at the Royal College of Art (RCA) London in the early 1990s. Critical design is located outside terms set by capital or production and counters conventions of utility, technology, and fiscal gain. Produced for exhibit rather than sale, these designs are "less about problem solving and more about problem finding within disciplinary and societal discourse." (Mazé 2007, p. 211)

Despite lack of analysis, the view exists that what Dunne outlines in 'Hertzian Tales' (1997) is representative of the field. 'Critical design' is adopted as an umbrella term for any type of practice that suggests product design offers possibilities beyond solving of design problems. 'Critical design' is now synonymous with a movement that utilises product design as a form of critical investigation.

This generalisation has led to critical design having values applied to it that do not correspond with the intentions of some designers engaging in critical practice as Pullin writes:

> … I am never sure whether to use the term critical design to define my own work these days. The term is so associated with the Design Interactions course at the RCA, and its subversive, often dystopian, visions of technological futures. (2010, p. 324)

Moreover, Dunne and Raby's 'critical design' has reconstituted the history of critical practice, and other forms of conceptual design practice and designers operating critically are ultimately seen as practicing 'critical design'.

> I see as many parallels with the work of Bill Gaver's Interaction Research Studio at Goldsmiths – another group whose work is associated with critical design by observers, but not thought of as such by its practitioners. We haven't managed to come up with as compelling an alternative definition yet though. (Pullin, 2010, p. 324)

In the rest of this chapter, I orientate the reader to the research at hand by outlining how this research challenges the colloquial understanding through a mode of investigation situated in the field of design studies. The study starts by presenting Dunne's 'critical design' amongst other critical practice. While acknowledging the radical nature of Dunne's PhD, critical design is discussed from a historic perspective and contextualised by examples of critical and marginalised practice. The research shows the increasing number of designers and scholars aiming to define and present a non-commercial interrogative, discursive, experimental, transitional and propositional methods of designing. Each case aims to expose the current state of design seeking to avoid or challenge conventional production and consumption. They offer alternative perspectives within design to those in a commercially orientated practice aiming for transcendence and possibilities beyond prescribed mainstream design agendas.

1.2 Mainstream design

Throughout the thesis 'mainstream', 'traditional', 'orthodox', 'conventional' and 'affirmative' design are used to describe design activity that represents a governing mentality in product design. This mentality constitutes widely shared values, norms and expectations of how product design operates. In mainstream design, the market provides strong incentives for designers to participate in economic systems that are arguably beyond individuals' ability to confront. I do not set critical design in opposition to mainstream design. It is more appropriate to see critical design as

operating in parallel. It utilises the same methods, processes as mainstream design to achieve different ends: discourse rather than technological or fiscal gain.

1.3 Why study critical design?

Nieusma (2004) identifies forms of design practice set outside what might be considered mainstream design. These include, participatory design, co-design and feminist design. Consideration of such practices is important because it brings into light the interconnected constraints to agency for designers who seek to challenge the status quo and mainstream applications of product design. However, in contrast to the research that focuses on these marginalised practices, formal analysis of critical design practice has not kept pace. This is concerning as in 'Design Noir' Dunne and Raby argue that:

> The design profession needs to mature and find ways of operating outside the tight constraints of servicing industry. At its worst product design simply reinforces global capitalist values. Design needs to see this for what it is just one possibility and to develop alternative roles for itself. It needs to establish an intellectual stance of its own, or the design profession is destined to lose all intellectual credibility and viewed simply as an agent of capitalism. (2001, p. 59)

Dunne and Raby's statement can be subverted and it argued that, critical design needs to establish an intellectual stance of its own or it is destined to lose the intellectual credibility it seeks. The danger is that critical design becomes overly self-reflexive and introverted. As it gathers in popularity, there is a risk of it becoming a parody of itself and its usefulness as part of a larger disciplinary project is undermined. There are already utterances of critical design being, "design for designs sake," "design for designers" or perhaps more appropriately "design for critical designers."[1]

In design research critical design has not been viewed as a serious form of design where ideological basis and theoretical grounding are a requirement. It is sustained in a somewhat closed discourse limited to design magazines, niche publications and gallery showcases. Its theorisation and documentation is left to design journalists, bloggers and curators whose primary agendas are to sell magazines, accumulate hits or to get the viewing public through gallery doors.

---

[1] When I presented a paper at the DRS Conference in Montreal critical was introduced as a niche practice for a small community of practitioners in the introduction to the track. This seems far removed from the notions of a practice accessible to everyone through the common language of product.

Thus, there is a need for the constructive input of a broader community to legitimise the practice as a useful form of product design in disciplinary and professional contexts. This legitimisation will only come about through critique and probmlamitazation of the practice. At the time of writing, the design studies focus on critical design is limited compared to that which focuses other fields of practice. This is evident in the lack of work that specifically addresses critical design, compared to the papers and dedicated journals focusing on other marginalised practices.

Practices such as participatory design, socially responsible design and co-design, have emerged in parallel to critical design. These practices reflect critically upon the relationship between design and the communities that are being designed for, and, or with. These practices operate beyond conditions set by fiscal gain or technological development and are established as intellectual and politically motivated practices, informing policy and used in address to societal concerns. They imply a critique of mainstream design but unlike critical design, they are assumed progressive. Now considered orthodox they have been absorbed into the disciplinary core and discourses through the shared efforts of theorists, commentators and practitioners. This research strives to call on a design studies community to engage with critical design in the same way that these once marginalised practices have been. The research does this by providing contextual tools and theoretical apparatus required to engage in a discussion about critical design practice.

1.4 Design as a research paradigm

This project is framed as design research. As a field of inquiry, research in design can be traced to the 1960s design methods movement spearheaded by Nigel Cross. Cross (2006) writes that design research is systematic enquiry whose goal is knowledge of, or in, the embodiment of configuration, composition, structure, purpose, value and meaning in manufactured things and systems. He argues that, design research falls into three main categories: Design epistemology – the study of designerly ways of knowing; Design phenomenology – the study of form and configuration of artefacts; Design praxiology – the study of practices and processes of design.

The area of design research experiences intensive disputes concerning the definition and evaluation of theoretical and investigative approaches. Different approaches have been applied that attempt to define and structure the field. Frayling's (1993) seminal paper characterises three types of activity research "Into" "Through" and "For" design.

Friedman (2003) (Findelli, 2008; Forlizzi, Stolterman, & Zimmerman, 2009) have all gone on to conceptualise the field in similar ways.

By means of a summary, research *into* design is concerned with historical research, aesthetic or perceptual research, research into a variety of theoretical perspectives on art and design – social, economic political, ethical, cultural, iconographic, technical, material structural. There are countless archives and models to derive its rules and procedures.

Research *through* design is conciliation of theory and practice embedded, implicated, engaged, and situated theory. Research through design helps build a theory of design by adopting an epistemological posture more consonant with what is specific to design: the project.

Research *for* design is where the end product is an artefact – where the thinking is to speak, embodied in the artefact, where the goal is not primarily communicable knowledge in the sense of verbal communication but in the sense of visual or iconic or imaginistc communication.

As described in later chapters, critical design is often discussed as 'research *through* design' by some attempting to theorise the field (Grand, 2010; Grand & Wiedmer, 2010) but we will see throughout the thesis that because of the focus on imaginistc communication, critical design also has characteristics determined by the *for* category. This is the case in Ball and Naylor's practice as documented in 'Form Follows Idea' (2005). Additionally, developments in Speculative Design see critical design being embraced in the scientific and social-scientific paradigms. (Galloway, 2007; Beaver, Kerridge, & Pennington, 2009; Wilkie A. , 2010) In these modes of inquiry, questions can be asked of the canonical classifications and how they facilitate the trans-disciplinary agendas.

Critical design practice positioned in a research context is a playful activity that resists academic stereotype. The difficulty with not conforming to serotype is that the world places little confidence in the play of things and a great deal of reliance on constraints, authority and institutional structures. This is why we are over run with creed, criteria, rules of life, rules of method and trinities of design research. Critical design's ill fit into the canonical classification of design research might contribute to the issue that few design studies scholars have attempted to engage with the practice.

1.5 Design Studies

While the focus of this study is critical design practice and its origins lie in my own design practice, this is not practice led or action research. This research is carried out from a theoretical rather than historical or a practical perspective. This research is an investigation *into* practice. It takes as its subject critical design practice; its methods, themes and the contexts engendered in the work by the designers. It aims to develop the theoretical discourse within design studies. Having established that the study primarily investigates design practice; it intersects categories of praxiology and epistemology (Cross, 2006; Jonas, 2007). It is positioned at this intersection because to understand the practice there is a need to understand how the designer thinks and the values that inform their practice. Engaging with the designers to identify values and contexts engendered in their design work is considered the most important aspect of this research.

The study contributes to design studies. Pioneers in this field consider design to be a liberal art and root understanding about design in the humanities not the sciences. For example, Richard Buchannan's primary interest is casting design as a contemporary form of rhetoric, its concern being the communication of a belief and the incitement to action through argument. According to Buchannan design as rhetoric assumes that designers are, "agents of rhetorical thinking in the new productive sciences of our time" and the discipline of design employs "rhetorical doctrines and devices in its work of shaping products and environments" (2001a, 187). As rhetorical strategy all products, digital, analogue, tangible, intangible, affirmative or critical are vivid arguments about how we should lead our lives. (187) Given such a position, design practice and scholarship should focus on means of constructing and analysing arguments enacted or embodied in design process and products. This research does this through the exploration of the values embedded in critical design through a framework of design culture.

1.6 Design Culture

Design Culture is the study of the interrelationships between design artefacts, the work of designers, production and their consumption (Julier, 2006). Informed by visual and material culture, design culture is interested in things, images, values and the contexts in which they exist. Julier presents a framework for the activities embedded in the domains of Design Culture. These frames inform the types of questions to ask in a study of design. He describes frames of activity relevant to design as *Value, Circulation* and *Practice*. In this model, the designer's role is in the creation of 'Value'. In an orthodox design practice, this is most obviously commercial value, but it may also include – and this is important – social, cultural, political and symbolic value. This study aims to elicit values, assumptions and explanations about the design practice. A study carried out in this way offers a unique contribution to design studies because the existing work that bears on critical design practice does not attend in detail to designers' values. Considering 'Value' raises questions relating to *why* critical design is practiced.

We will see throughout the thesis that critical design is a context informed practice, which motivates an audience in a forum to debate design. Therefore, to understand this 'Circulation' suggests asking questions relating to contexts of operation and dissemination as well as channels of distribution. Questions about circulation relate to *where* critical design operates.

Attention to the 'practice' of everyday life and understanding socially constituted activities, collectively held practices and competencies are fundamental in critical design. Critical design functions through the subversion of these conventional associations, using methods of defamiliarisation and estrangement. An acute observation and understanding of the practice of everyday life is necessary for critical design to work. Questioning how the designers subvert these practices is fundamental to understanding *how* critical design operates, raising questions relating to methods used, and *what* topics the designers focus on.

1.7 Aims and objectives

Design Culture frames this inquiry *into* critical design and informs what research questions to ask, these are:

- What are the exemplars of critical design?
- What is the focus of critique or the subject of investigation in examples of critical design work; the contexts engendered in the design work.
- Where and in what contexts does critical design operate?
- How and by what methods and tactics do critical designers operate?
- Why are the designers working in this way?
- What is needed to engage a border audience in the discourse on critical design practice?

Research aims:

1. This research aims to problematise, define and reassess the concept of 'critical design' contextualising it amongst other forms of critical design practice.
2. The research aims to provide theoretical apparatus to engage a design studies readership in the discourse on critical design.

Research objectives:

1. Identify critical approaches in product design.
2. Develop an understanding of the methods used in the practice.
3. Review subject domain authorities and engage expert designers in the field.
4. Identify the contexts engendered in critical design work.
5. Identify and extract salient concepts in critical design practice.
6. Organise concepts into a taxonomy of critical practice in product design.

1.8 Methodology

Cross writes, design knowledge resides firstly in people and that one immediate subject of design research is the investigation of how people design (2007). This suggests empirical studies of design behaviour or theoretical deliberation and reflection on the nature of design ability. He goes on to write that design knowledge resides secondly in processes, in the tactics and strategies and value augmentation when designing. This suggests engaging with and observing practitioners and their methods. With these considerations in mind, a methodology is employed that interacts with 'critical designers'. Emphasis is placed on the designers' values and the contexts engendered in the designs.

A range of methods was reviewed for their appropriateness. Because this research is concerned with designers' work, experience and values, quantitative empirical methods in the positivist research tradition were ruled out. Qualitative approaches that focus on meaning, experience and interpretation are considered most appropriate to meet the objectives of this study.

The most important aspect of the research is to develop understanding into the values held by designers and the contexts engendered in their design work. The most feasible and direct way to do this was through interview. A hermeneutic methodology was chosen and employed to answer a series of questions that were informed by a Design Culture framework of inquiry. This focused on designers' values and descriptions of their practice. A set of conversational interviews informed an understanding of how the designers operate and their rationale for designing.

The findings presented in chapter six portray these values and contexts engendered in work from nine designers. The analysis drew from the complete verbal content transcribed from the interviews. The analysis carried out on the interview transcripts, enabled interpretation of patterns in approaches and salient concepts and descriptions. A code to theory model for inductive qualitative analysis was chosen for its appropriateness.

Two coding cycles were used. The first cycle identified categories through methods of descriptive coding and designer's attitudes and beliefs through methods of value coding. A second coding cycle focused the analysis and the categories were abstracted to generate four salient concepts.

The interviews themselves were subjected to a hermeneutic analysis that drew from the extensive contextual review documented in chapters two to four. This hermeneutic analysis reviewed each interview for the unique voice and discussed issues raised by the participant specific to their individual experiences and engagement with critical design.

The interviews, coding, and interpretation through dialogical reasoning drawing on theoretical understanding developed through this research ultimately grounds the taxonomy presented in chapter seven.

1.9 Hermeneutics

The interpretive methodology adopted fits with the methodological approach known as a hermeneutic. In hermeneutic research, it is important for the researcher to clarify their interpretation of hermeneutics. This hermeneutic project draws from methods of inductive grounded theory (Strauss & Corbin, 1998) using contextual review and interview methods to acquire data inductively, analyse it, and construct the theoretical apparatus detailed in chapter seven. This research does not explicitly explore my personal experience and is not considered phenomenological. The study is a critical hermeneutic rather than philosophical hermeneutic. The hermeneutic is developed from Gadamer who calls for self-reflection and critical analysis of the interests at stake in both the research and the methods used in conducting the research.[2] Emphasis is placed on dialog in the research. Dialogue occurs between the researcher and designers through interview. Processes of dialogical reflection inform the interpretation of material documented. The interpretive process draws on the work of Caputo (1987) Gadamer (1998), Klein and Myers (1999) and Jones (2000) who propose seven principles that research carried out this tradition should consider (see appendix a). I abstract from these studies a set of processes to create an interpretive framework for the investigation. The interpretive framework informs the eight-chapter structure of the thesis.

[2] Gadamer's hermeneutics emphasises the embeddedness of language in our understanding of our world. His work helped extend philosophical hermeneutics to critical hermeneutics by stressing the importance of tradition, background, and history in our ways of understanding. Gadamer believed that understanding comes from interpretations embedded in our linguistic and cultural traditions that contribute to our inherent prejudices. For Gadamer the only real question is how meaning and truth get passed along and handed down.

1.10 Thesis structure

I enter into the *hermeneutic circle* of understanding in the introduction and the first part of this thesis, consisting of chapters one to four. This is illustrated through the reflective account at the start of this chapter and the discussion on the projects conception and development.

The research *context* is established through chapters one to four, which comprises the contextual review. The interview and findings chapters introduce *multiple interpretations* of the field, which are established through interaction with participants, and processes of *dialogical reflection*. *Suspicion and sensitivity* to bias is exercised throughout the research.

The contextual review establishes the rationale for this research through an examination of critical design practice. It considers the conditions that have led to contemporary examples of critical practice. It delineates the antecedence of critical design practice and focuses on other research being carried out in the field. The literature shows how most studies in critical design are practice led, where designing is used to investigate a specific topic for example, the electromagnetic landscape (Dunne A. , 1997), public engagement with science and technology (Beaver, Kerridge, & Pennington, 2009) or domestic robotics (Auger, Swan, & Taylor, 2010). In these projects, the design researcher reflects on their own practice to develop an understanding of the role product design can play as a critical and investigative tool. In other instances, design researchers attempt to develop a methodology for critical design (Bowen, 2008). The review identifies scholars who are attempting to map critical design against other forms of creative practice.

The chapter goes on to identify commentary that focuses on critical design from the perspective of art. This discussion identifies the barriers that critical design practice faces as it asserts its function and role as a form of product design practice.

Chapter five presents a range of perspectives on critical design practice through a discussion on the interviews that form the major empirical part of this study. Each participant in the research offers a novel interpretation of critical design practice. The chapter provides evidence of the research process supporting a reciprocal dialogue between the researcher and participants.

Chapter six presents an analysis of the interviews. The interviews are analysed through a process of inductive reasoning. This process is characterised by reading and coding

transcripts to identify topics, which are grouped into analytical categories from which four salient concepts are abstracted to identify salience in the interviews.

These concepts are, *Engendered contexts: Discipline Science and Society*; *Satiric Design*; *Context and Facilitation*; *Function Distribution and Dissemination*; these concepts inform questions raised by the design culture frame of inquiry relating to *what* types of critical design practice and *what* is the focus of the practice? *How* and *why* is it done? *Where* does it operate and disseminate?

From the insight gained in the coding process, three types of critical design practice are presented in chapter seven. These are *Associative*, *Speculative* and *Critical Design* these are informed by the salient concepts and further reading into the concepts generated from the analysis. They are integrated into a taxonomic space with a visual and a written component. The taxonomy in its written and visual form provides the theoretical apparatus to map the field of practice, compare projects, and identify trajectories of practice.

I argue that contemporary critical design practice is characterised by three types of practice. These are *Associative Design*, *Speculative Design* and *Critical Design*. Associative Design emerged from political forms of radical and anti-design, drawing on mechanisms of subversion and experimentation in conceptual art. Speculative Design advances product design to comment on emerging science and technology, drawing on socio-scientific research and theories. It has developed in the number of examples and prominence over the past six years. Critical Design functions as a form of critical language and offers a socio-cultural critique. It is dystopic in its character and it is used to make social comment through the processes, practices and objects of product design.

In Associative Design, the focus is design. Speculative Design looks beyond design exploring applications in the field of science and technology. Critical Design challenges status quo conditions and design's function in society. The research establishes how these practices function as a form of *Satiric Design*. The research reveals that the characteristics of satire and the range of techniques used to offer a satiric response are useful means to differentiate these three types of practice.

The concepts established through this research identify precise points inherent to the critical attitude in product design. The taxonomy provides specific anchoring points around which comparisons can be drawn between projects in critical design practice

and a discourse developed. The taxonomic space presents an illustrative summary of the research. It offers observers of the practice a territory to analyse and critique.

In chapter eight, the research process is concluded and the contribution to knowledge outlined. The originality of this study is a taxonomy of critical practice. The study contributes to the literature on critical practice in product design. It provides a theoretical account of the practice supported by examples and evidence from interviews and analysis. It provides an account of the methods used in critical design practice. It outlines implications and possible directions for future research into critical design practice.

1.11 Conclusion

This chapter has introduced the research establishing what to expect from this thesis. It has located the study as contributing to the field of design studies as a study *into* critical design. It considers critical design in a framework of Design Culture. A critical hermeneutic methodology is outlined, expert critical designers are interviewed and in light of the analysis, a taxonomy of practice presented. The following chapter begins the contextual review of critical design first by reviewing the practice from a historic perspective before going on to review theoretical perspectives that centre on, and are prevalent in critical design practice.

Chapter two

Critical design and a history of marginal practice

2 Critical design and a history of marginalised practice

This chapter outlines a brief history of critical design practice. It then focuses specifically on the concept of 'critical design' developed by researchers at the RCA London. Relating to the objectives of this research, the discussion sets out to determine the domain and scope of the field of critical design practice in a historical context. In the essay, 'Critical design-forgotten history or paradigm shift' Cilla Robach (2005) identifies one of the most pressing questions facing critical design practice. Her title suggests historical precedents are often omitted from the contemporary discourse in critical design. Robach writes how it is difficult to pinpoint where critical design began stating that, "critical design was not new to the 1990s and how predecessors can be found in radical and anti-design." (p. 34) She goes on to write how, "some argue that critical design started with the design collective Droog in their 1993 Milan exhibition, and how others suggest it started with Dunne and Raby at the RCA." (p. 34) The following discussion addresses these events and amongst others acknowledges their contributions to the development of a critical tradition in product design. The overall aim of this chapter is to illustrate that 'Critical Design', as a concept, is part of a larger and older tradition of conceptual, critical, and politicised practice.

2.1 Radical Design

Conceptual design has its roots in artistic avant garde practices. It is inspired by and uses methods developed by Dada, the Situationist and Arte Povera movements. The earliest form of conceptual design[3] was developed in Italy during the late 1950s and 60s and became known as radical design. During the Bel Design era[4] the Castiglioni brothers started to integrate redefinitions of context and use into their products. In radical design product designers dissasociated themselves from the interests of pecuniary gain and embraced political goals. The movement sought a discourse with capitalist consumer society and a provocative design culture emerged out of a general dissatisfaction with the role of designer in service to industry. The Italian radical designers attempted to create new and unusual experiences with objects by using readymades from industrial production and incorporating them into the designs of

[3] Here conceptual design is not taken to mean an early stage in the design process but as a finished object that is about ideas rather than technical function, utility, practicality, efficiency etc.

[4]This describes a period of prosperity and mass consumption in the 1960s. In Italy it was known as 'Bel design' in Germany 'good form', it was a concept that ruled the mainstream design of large manufactures, the design was rational and product orientated typified by the likes of Dieter Rams and Braun, Ettore Sottsass and Olivetti.

furniture and lighting. Designing moved beyond traditional notions of functionality to embed intellectual value into the work. Looking for materials suitable to make commentary, the radical designers promoted emotional play and symbolism over practical function and refuted assumptions of utilitarianism and consumption. (Brandes, Stich, & Wender, 2009)

Figure 2.1. Archille and Piert Giacomo Castiglioni, *Zanotta Sella stool with bicycle saddle,* 1957. Italian radical design: The design implies new combinations and ways of using existing things. They aimed to endow their products with an individual object character.

2.2 The Bristol Experiment

A text that is often omitted from the discussion in critical practice is 'What is a designer: things, places and messages' by the designer, theorist and educator Norman Potter (2002). In his thesis first published in 1968, Potter mounts a critique of industrial design carried out for the purpose of financial gain and cultural exploitation. Potter was part of a group of designers, architects, an English and a Philosophy lecturer mostly from the RCA London who established the Construction School in Bristol UK in 1964. In its formative years, the aim of the 'Bristol Experiment' as Potter refers to the design school, was to set about re-examining certain assumptions of the modern movement in design. (2002, p. 166) It was established in part as a response to the work of the Hochschule für Gestaltung, College of design at Ulm[5]. Potter writes in the schools prospectus, "our position is ranged-left and open ended"; "putting things together that make sense" and importantly "design is a field of concern, response and enquiry as often as a decision of consequence." (p 168) The idea that product design can function

[5] The Bauhaus and Ulm school were German design schools that advocated functionalist design. The Bauhaus was build on modernist ideals that believed that design should educate, there should be reduction to essentials and functional form should clear society of bourgeois content and steered utilisation towards predefined behaviours in use.

as a field of concern, response and as a mode of inquiry is a fundamental principle in contemporary examples of critical design practice.

2.3 Anti Design

In the same period the anti-design movement emerged. Originating in England and Austria, and then Italy, anti-design continued a tradition of artistic and political discourse in design. Groups such as Archigram, Superstudio and Archizoom were formed out of disillusionment with the modernist ideals that had dominated design thinking since the early 1900s. By the late 1960s, modernism had hit intellectual standstill. Rather than view design as a benevolent force, anti-design collectives saw it as having aggravated social and environmental problems. The response was to develop anti-design projects. These projects aimed to open an intellectual discourse in design. In the spirit of the time, anti-design collectives established explicit ideological and intellectual positions, where protest was seen as essential and the work was grounded in direct political and philosophical action. Rather than design in service to problems that had been determined in advance, design was used to facilitate active and critical participation.[6] (Burkhardt, 1988; Lang & Menking, 2003).

The common element within this community of practice was the conception of design as means of communication and political instrument. The work was connected to the artistic avant-gardes and thus became vehicles of a critical social theory and symbolic new ways of rethinking design as a form of conceptual research. (Prina, 2008) While object-oriented form was often applied provisionally to communicate ideas and provoke debate, the projects were ultimately designed for ideological consumption. The work considered psychological needs and inspired new behaviours through the ironic combination of different design languages that criticised and exposed the contradictions of a bourgeois society born out of functionalist ideology.

In the majority of cases, projects lost their functional connotations acquiring symbolic cultural and existential functions. This new interpretation of product design mostly used inexpensive and experimental technology removed from conventional industrial cycles.

[6] The notion of active critical participation extended into participatory design. Participatory design emerged towards the late 1960s born out of ideas of democratising the work place, ideals of critical intervention and methods of future workshops. Today participatory design methods have been appropriately integrated into mainstream design practice. However, at the time the notion of participation on the part of the user in an authoritative design process was radical. It challenged the professional role of the designer.

For example, the design group Alchimia used mundane designs to proclaim trivial culture as the new high culture. Alessandro Mendini implemented this approach through the re-interpretation of design classics by adorning them with paintings and ornament. Superstudio and Archigram used collage and produced magazine publications to visualise localised utopian futures. The legacy of Superstudio and Archigram's design language ranging from design fiction, to technocratic visualisations, to storyboard illustration, to photomontage can be seen in many examples of contemporary critical design practice.

Figure 2.2. Haus-Rucker-Co (Günter Zamp Kelp, Laurids Ortner and Klaus Pinter), *Environment Transformers, Fly Head, View Atomizer and Drizzler*, 1968.

Figure 2.3. AugerLoizeau, *Social Tele-presence Rent-a-body service Blind date*, 2001.

Figure 2.4. Superstudio, *The Falling In Love Machine,* 1968. Superstudio began to dismiss the notion that architecture is powerful, positive and a force for progress as improbable and optimistic. They started to articulate their political and commercial disillusionment of the time.

Figure 2.5. Dunne and Raby, *After life Euthanasia Machine,* 2010. A device that can uses the energy generated from a lovers death to help the second one on their way. The design language is just a few steps removed from Superstudio's Falling in love machine.

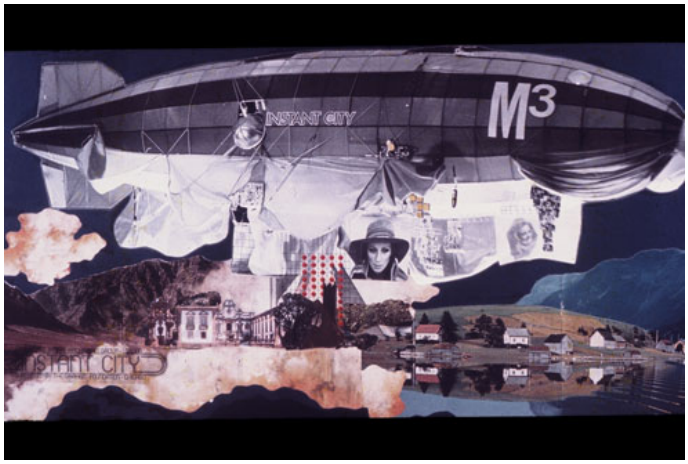


Figure 2.6. Peter Cook, *Archigram Instant City Airships*, 1968. The city airship would temporarily land in small communities so that they could enjoy the 'buzz' of life in a city.

Figure 2.7. Brendan Walker, *Seat belts AirLife*. From the project Chromo 11: engineering the trill, Thrilling Designs, 2005. The design language references the language of Archigram and Superstudio's collages.

In 1972, concepts from Italian radical design were presented in 'The New Domestic Landscape exhibition in the Museum of Modern Art New York'. The exhibition displayed a generation of designers who, "despairing of effecting social change through design, regard their task as essentially a political one." (Ambaza, 1972, p. overleaf). The movement peaked with the establishment of the Memphis design collective in the 1980s. Ultimately, these provocative designs were consumed by mainstream design culture and the objects found their way into the high design galleries of the 1980s. (Julier, 2000, p. 78) Nevertheless, 'Disegno Radicale' and the anti-design movement had initiated an international re-orientation in product and industrial design that had temporally overcome the doctrine of functionalism perpetuated by Bauhaus and Ulm school teaching.

2.4 New Design

In the 1980s, an independent German counterpart to the Italian movements started to emerge. Setting itself apart from the German tradition of 'good form' and functionalism, the New German design or 'Unikat Design' aimed at instigating a public debate through its use of alternative design methods. Designers used a range of everyday objects from areas beyond the domestic space and transformed them into furniture. Objects made from trivial everyday materials and waste products were created in small series, or as one off unique design pieces.

In the early nineties Droog design was established by critic Renny Ramakers and jewellery designer Gijs Bakker. Droog pulled together a number of young furniture designers from the Netherlands.[7] Like 'Disegno Radicale' and 'Unikat Design', The Droog collective had taken an antiauthoritarian spirit, an interest in the vernacular, and a concern for the environment and translated it into work that had the quality of collage and looked like propaganda. However, Droog's work was – and still is – disciplined by traditional attributes of 'good design'. Droog's aesthetic vocabulary is just a few steps removed from that of the Bauhaus. Droog designs – although playful and ironic – suggest formality and integrity, a strong sense of proportion and legibility.

Droog designers saw their task as gathering objects on the streets and reusing them. Droog's ethos was not to add new forms or ideas; the design ethos suggested they should reuse those as well. (Ramakers, 2002) The result was objects such as Tejo Remi's chest of draws, which were more or less traditional in their shape but consisted of various pieces of discarded furniture. The radical nature of Droog's objects is represented by Richard Hutten's 1994 bench design 'S[h]it on it.'

[7] Droog's first cohort of designers mostly came from the Design Academy Eindhoven. The Eindhoven approach was to focus design as social commentary considering a larger cultural agenda for design.

Figure 2.8 Tejo Remi, *Chest of Draws* 1992. In Remy's draws, since neither the type of object nor material was new, the shock of the familiar reassembled in a new manner was all the stronger.

Figure 2.9 Richard Hutten *S(h)it on it* 1994. Shaped as a swastika the bench is a literal, although ironic, example of the object as an expression of ideology.

Design groups like Stiletto and Droog represented a renewed confidence in conceptual design. The main goal of these was not to manufacture industrial products but to provide a critical examination of consumer practice. These include attempts to use juxtaposition and caricature, unusual materials and suggestions for alternative ways of using things, in order to create awareness of the designed objects.

In the essay 'Where is the designer on identity and plurality', Scholz (in Brandes, Stich, & Wender, 2009, p. 41) presents a range of examples demonstrating the main intentions of what she describes as 'new design'. Scholz describes the use of obsolete objects as "context transfer" (p. 41). She uses the term "Cut up" (p. 41) to describe new combinations of materials and collages that could include historical elements, and finally she talks of "hybrids" (p. 41) in which contrary to the traditional concept of homogeny in design; trivial objects are changed through the addition of extrinsic elements. In this way, the design functions at a conceptual level and initiating a discussion on and around the object becomes the work's purposive function. Scholz's terminology is useful in the context of this study because she starts to characterise the methods used to afford critical positions through design. These methods are present in contemporary examples of critical design practice. The discussion on the taxonomy in chapter seven shows how these methods are useful to differentiate between types of critical design practice.

2.5 Representative Design

With a technological shift from the mechanical to a post-industrial paradigm during the 1980s designers practicing in a technological, digitally orientated context began to recognise the potential challenges faced by Industrial Design as the digital electronic began to integrate into all sorts of domestic products. In his critique of dogmatic approaches in Industrial Design, Daniel Weil argued that designers are ill equipped to satisfy the demands placed by the electronic product and developments in Interaction Design. In a meeting of the world design congress, he argued:

> Industrial design must set about a re-interpretation of the languages and values – 'the mind set – of the mechanical and electronic world. This is not only because the new technologies demand the capacity for a broader and more abstract approach, but because of the emergence of such challenges to the established order as environmental awareness and major geopolitical changes. This requires the reassessment of design, production and marketing throughout the industrial chain. So we must give more intellectual depth to the experience of designing. To meet future challenges, the profession must recapture its traditional cultural and strategic brief. A brief that

> requires the translation of cultural values into contemporary ideas and products. It will not be enough to provide competent technical or problem solving services. (Wiel, 1994, p. 123)

Weil placed emphasis on a shift in design education endorsing a design culture that embraced intellectual experiment through design. He outlines a design process of, "interpretation, representation and communication." (p. 120) It is out of a concern of the uncritical appropriation of the electronic that a representative form of design began to emerge out of the RCA's Industrial Design department during the late 1980s and 1990s.

The designs produced at the RCA exploited the new freedom that digital technologies offered. However, the designers were more interested in representation and interpretation than function and interactivity. Rather than focusing on constraints such as manufacture and technological limitations, the range of projects was diverse and reflected the personalities and interests of the designers. The practice focussed on form and the reinterpretation of existing technologies.

At around the same time students on the Cranbrooke Academy's Industrial Design course were exploring the potential of product semantics. The design work was pursued through linguistic semiotic theory, aiming to understand the structure of language and how it conveys meaning and translating semiotic theory into product design. Many of the objects produced explored visual languages for information technology, hardware and consumer electronics. They used metaphor to establish relations between object and culture, aiming to move the designer closer to their audiences. Discussing Cranbrooke's approach Julier (2000) writes:

> …it must be remembered that the Cranbrooke approach was working as an educational laboratory for ideas, that while its proposals did much to challenge the hitherto accepted norms in design language, in the so called 'real world' its products would probably only appeal to niche markets. (p. 102)

This commentary can be extended to the RCA's representational approach. Activity in these areas was ultimately orientated around existing archetypes redesigning phones, televisions and personal computers and therefore sustained the dominant design ideology. The technologically and financially centred designs that would not penetrate the market because of excessive production costs and as Dunne argues, "fell short of their provocative potential" (1998, p. 26) because of the commercial focus on semiotic functionality.

2.6 Interaction Design

In 'real world' terms, experimental work was being developed at MIT's media lab. Operating on an ethos of "If imitation is the sincerest form of flattery, invention is the sincerest form of criticism" (Brand, 1988, p. 7) The Media Lab designed, developed and problematised digital communication technologies. Media lab aimed to collect process and lead redefinitions of technology. The characteristics of work produced at Media Lab are similar to many contemporary examples of critical design. However, its close links to industry and the fact it was about futures, it was about technology but "Social, political, economic speculation is something that the Media Lab ostensibly avoids" (Brand, 1988, p. 201) Like Cranbrooke Academy's Industrial design activity it fell short of its provocative potential. Media lab operated in the commercial heritage of world fairs and utopian visions of the future subscribing to ideas that technology in particular communications technology will liberate society. It was fitting that new scientist compares it to a digital Bauhaus. (Brand, 1988) Despite its commercial intent it is important in the discussion of critical design practice because of the experimental approaches it advocated and the critical attitudes that emerged in reaction.

In its infancy, Interaction Design was seen as a technical discipline drawing on the knowledge base of Human Computer Interaction. It brought together information scientists, psychologists, designers and computer specialists to develop the interface between human and computers. There have been various attempts within Interaction Design and its contributing disciplines to develop critical terms. For example, 'critical computing' is the topic of a small decennial conference exploring issues of society, democracy and ethics in systems development. The goals of this community in 'taking critical action' have been effectively integrated into development methods and processes, for example in participatory design (Muller, Wildman, & White, 1993) and in reframing certain disciplines such as informatics. (Floyd, 2005) Philip Agre (1997) outlines an approach he terms 'critical technical practice' that applies critical theory for analysing historical and operational frameworks in the field of artificial intelligence. While not explicitly addressing notions of criticality, these approaches in HCI have argued for increased reflection in practice. For example, Donald Schön's (1983) notion of the reflective practitioner resonates in calls for 'reflective design'. Jonas Löwgren and Erik Stolterman (2007) argue for developing thoughtfulness about personal design ability as a question of assuming responsibility for one's professional activity and design thinking. Phoebe Sengers has developed an argument for reflection as a means for both

designers and users to rethink dominant metaphors and values in HCI. (Sengers, 2005; Sengers, McCarthy, & Dourish, 2006) Shifting perspective from 'reflective design' to 'design for reflection', Lars Hällnas, Johan Redström, have developed foundations for exposing design issues in 'the aesthetics of use' an approach that indicates increasing commitment to reflection within design practice, upon design effects, and in use. (Hällnas & Redström, 2002a)

Somewhat laying the path through this terrain, under the direction of Gillian Crampton Smith, the RCA's Computer Related Design studio set out an agenda for product design positioning it as a vehicle for critical reflection on the role of design and technology in society. (Crampton Smith, 1997) The program explored ways that the traditional skills and knowledge of art and design disciplines can be applied to the design of new technology, artefacts and systems, focusing on interactive media, intelligent objects, and responsive environments. (Crampton Smith, 1994; Crampton Smith & Tabor, 1996) Extending the representational approach developed in the Industrial Design department and influenced by thinking in HCI and institutions such as the Media Lab the 'Critical Design' unit was established within the Computer Related Design Studio.

2.7 Critical Design

As a term, 'Critical Design' comes from the RCA. It describes a method of working that the Computer Related Design studio (CRD) used in a number of projects between 1994 and 2005. From a literary perspective, Gaver and Dunne first introduce 'Critical Design' in the paper 'The Pillow: Artist Designers in the Digital Age' (1997). They discuss the role of artist designer operating in a conceptual design context. They present a design centred methodology in which hypotheses and ideas are explored through design. In an orthodox design process, conceptual design is understood as an initial phase used before ideas are filtered for practicality and utility. Gaver and Dunne propose conceptual design as an activity in itself aimed not towards realising marketable products for industry, but instead towards raising challenging ideas for the public about the user's relationship with objects.

Like other conceptual design practices, 'Critical Design' employs methods that are usually associated with fine art practice. Rather than being centred on needs and problem solving, Gaver and Dunne suggest that product design can be about ideas and provocation.

Understanding the difficulty in extending product design's agency in this way, they identify the attributes that make the 'Critical Design' objects, design rather than conceptual art. They do this with reference to 'The Pillow' designed by Dunne as part of his PhD investigation "Hertzian Tales". They draw attention to the physical design and the material qualities of the object, characterising it as product design by the use of inexpensive components and construction techniques characteristic of mass-produced objects. (Gaver & Dunne, 1997, p. 361)

Figure 2.10 Anthony Dunne *The Pillow* 1995. The Pillow is an abstract radio for encouraging an awareness of the local electro-climate. It picks up mobile phones, pagers, walkie-talkies and even baby monitoring devices questioning notions of privacy although the person listening to conversations is a social invader, the radiation from the phone call is invading their home and body.

'The Pillow' is one of the first examples of a 'Critical Design' – however later in 'Hertzian Tales' Dunne questions this by writing, "it is too seductive to be critical design in that the values it embodies are not strange enough." (1998, p. 129) This suggests that by Dunne's reasoning 'Critical Design' needs to be strange to work.

'The Pillow' scans and responds to changes in the radio frequency environment and switches itself on when signals become stronger. The design was initially shown as part of the 'Monitor as Material exhibition' 1996. The ambiguous design of the object proved problematic. In the gallery space, the experience of seeing the design is compartmentalised and separated from everyday concerns and as a result, the design required explanation. Addressing this Dunne developed an extrinsic narrative in the form of a pseudo documentary 'Pillow Talk' that features a user interacting with the object. This exercise situates the object in a context of use. The documentary supported

the assertion that 'The Pillow' is an object of design because the viewer can see the design in context and hear the user describe their interaction with it.

However, it is not only the material qualities that distinguish objects of critical design as design but the assertion that they are design. The assertion that the object is a prototype design encourages the viewer to consider it in an everyday context of use. This prompts the viewer to ask different questions of the object than if it was treated as an artwork. Framed as design critical design objects provoke a different discussion than if framed as art. This is an important point made throughout this thesis, to assert critical design as product design and to discuss the practice in disciplinary terms.

2.8 Conclusions

This chapter has presented a historical synopsis of critical practice. Its primary aim is to illustrate how Critical Design is part of an older tradition of criticality. From a methodological perspective, it is important to acknowledge the history and to delineate Critical Design's antecedence. The discussion has identified methods used to establish the critical move through design i.e. "cut up, 'context transfer and hybridity". The discussion has also shown where methods and approaches used in the past inform contemporary examples of critical design. The chapter has also identified social and technological conditions that lead to the emergence of critical practices. An interesting observation is how examples of critical practice emerge out of turbulent political and technological shifts. Whether it was the disillusionment with functionalism, the political turmoil of the 1960s, or the technological shift from the mechanical to the post-industrial digital paradigm, Designers active at these times find their voice through design practice. It is here that the critical position is established. The work it is a critique of product design and its socio-technical agency and therefore refuses to abandon product design when it faces difficult social political and technological choices.[8]

For a historic perspective, the role of the educational institution is interesting. The educational institution facilitated the Bristol experiment. The Cranbrooke academy experiments in product semantics. In a similar vein, MIT Media Lab and the RCA Computer Related Design Studio provided environments for experimentation with new

[8] It is a critique of product design therefore refuses to abandon product design is a reinterpretation of Horkheimer and Adorno's commentary on the 'Dialectic of enlightenment' talking about their critical theory project's relationship to philosophy they write: "it is a critique of philosophy therefore refuses to abandon philosophy." (2010 p.x) in this respect, criticality in design only works if the work is seen as design. this point is reasserted throughout the thesis.

technology and approaches to designing that would not be carried out in an applied-industrial context. Although this is historically significant, it pertains to contemporary practice. The majority of critical design practice is associated with educational institutions and is often framed as research carried out within this context.

From a theoretical perspective, reviewing the methods used in preceding examples of critical design practice is useful today when problamitising 'Critical Design' and attempting to identify the different approaches used within the practice. We will see later in the thesis how these methods, developed in various fields of design, to establish the critical move through design over the past forty years can be used today to differentiate between contemporary examples of critical design practice.

Chapter three

Forms of inquiry: critical design, methods and theoretical perspectives

3 Forms of inquiry: critical design, methods and theoretical perspectives

This chapter aims to illustrate design activity, theoretical perspectives and methods used in critical design practice. The chapter begins by introducing theoretical perspectives that inform the practice through a discussion on 'Para-functionality', 'Post-optimal design' and the 'Aesthetics of use' as concepts that have been developed over the past fifteen years to explain how critical design practice works. The chapter outlines how critical design is perceived as a form of design research. However, it shows how critical design as a research method is not objective or explanatory, and how it is criticised for not being scientifically rigorous because of the inherent uncertainty to be found in the design process and the objects it produces (Boehner, Vertesi, Sengers, & Dourish, 2007). It embraces subjectivity, ambiguity and the object as an evocative agent. In short, critical design as a research method sets out to ask more questions than it aims to answer. With this in mind, the discussion on design activity, theoretical perspectives and methods used shows, how in a changing territory of design research, critical design practice operates though its provocative objects with their ambiguous characteristics. Moreover, how this allows the user to see and experience phenomena that would otherwise go unnoticed, as it provokes new ways of thinking through objects. The discussion illustrates how the open-ended and relational characteristics of the work produced by critical designers are being embraced by disciplines external to product design. The chapter contextualises critical design practice in relation to the sciences and the social sciences through a discussion on design examples and methods. It provides insight into the methods used in critical design that might contribute as research and develop new theoretical understandings.

3.1 Post-optimal design and Para-functionality

The most notable project that uses critical design as a research method is 'Hertzian Tales' (1997). 'Hertzian Tales' is described as a methodological pioneer by a range of scholars who argue that it presented a new method for practice led design research e.g. (Seago & Dunne, 1999; Mazé, 2007; Bredies, Jooste, & Chow, 2009). In an analysis of the thesis, Yee writes that, "the work offers a positive and radical model of the action researcher in design as a critical interpreter of design processes and their relationship to culture and society" (Yee, 2009, p. 186). In 'Hertzian Tales', Dunne introduces a practice that operates outside of technical and commercially driven product design. He

positions product design as an investigative medium used to stimulate debate. His argument is established through a critique of mainstream Industrial Design and the Human Factors community's preoccupation with technical function in the design of electronic products.[9] He argues a need to reconsider the ambition to create a tight fit between user and product:

> In the Human Factors world, objects, it seems, must be understood rather than interpreted. This raises the question: are conventional notions of user-friendliness compatible with aesthetic experience? Perhaps with aesthetics, a different path must be taken: an aesthetic approach might subsume and subvert the idea of user-friendliness and provide an alternative model of interactivity. (Dunne A. , 1998, p. 32)

The objects produced by Dunne draw attention to unseen conditions in everyday life, by questioning dominant technological ideology in the context of electronic products. He does this through five design proposals that figuratively interact with the electromagnetic landscape.

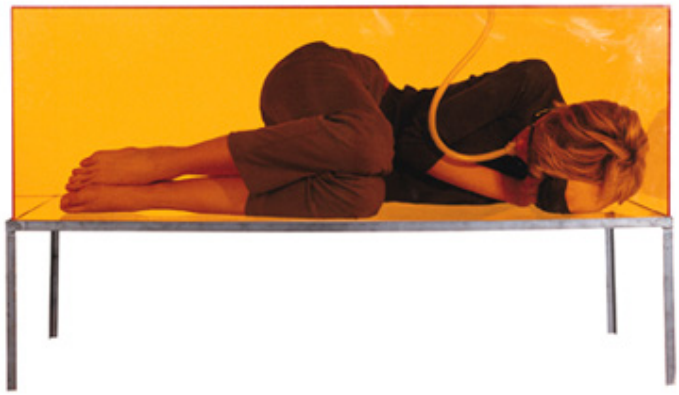


Figure 3.1 Dunne and Raby, *Faraday Chair* 1997. The Chair provides shelter from electromagnetic fields invading homes. It is a utilitarian shelter from the constant bombardment of telecommunication and electronic radiation.

Dunne describes the designs as 'Post-optimal Objects' writing:

> The most difficult challenges for designers of electronic products now lie not in technical and semiotic functionality, where optimal levels of performance are already attainable, but in the realms of metaphysics, poetry and aesthetics where little [design] research has been carried out (p. 22)

---

[9] The Human Factors community aim to achieve 'fit' between human and object. See: (Norman, 1998). Technical function is perceived as the purposive and utilitarian value of an object it is expected to work in a particular way by the user through material and visual affordances. Function is discussed at greater length in chapter four.

The objects function through 'Para-functionality':

> The term means here a form of design where function is used to encourage reflection on how electronic products condition our behaviour. The prefix "para-" suggests that such design is within the realms of utility but attempts to go beyond conventional definitions of functionalism to include the poetic. (p. 39)

Dunne suggests that, in the form of the post-optimal object, the potential of product design could be employed to more socially beneficial ends. He proposes a kind of subversion, which he calls user-unfriendliness:

> If user-friendliness characterises the relationship between the user and the optimal object, user-unfriendliness then, a form of gentle provocation, could characterise the post-optimal object. The emphasis shifts from optimising the fit between people and electronic objects though transparent communication, to providing aesthetic experiences through the electronic objects themselves. (p. 32)

In this sense, user-unfriendliness does not mean user-hostility, but rather a poetic mechanism becoming aware of the language of the object itself. Stimulating the user's imagination through interaction with objects, Dunne aims to explore what might be, and to achieve an experience similar to the quality of poetry and poetic language. He sets up the subversion of experience in order to give design and its objects new meaning.

The key methodological factor in Dunne's thesis is established in these concepts of 'Post-optimal' and 'Para-functionality.' Using these mechanisms, he positions the objects as a form of discourse. The idea of object as discourse is a key point.[10] Within this particular unity i.e. the act of designing, the object, the subjective interpretations and processes that inform the design, is established as a mode of discourse through which a specific position is articulated.

Using (Frayling, 1993) categorisation of design research, Dunne describes 'Critical Design' as a form of research *through* design.[11] This is later reiterated in Dunne and Raby's (2008) 'A/B manifesto for Critical Design'. Dunne explicitly characterises

---

[10] In the 'Archaeology of Knowledge' Foucault attempted to find rules for how discourses are framed. For Foucault, discourse is not limited to disciplinary or linguistic discourse but entire ways of understanding things from various subjectivities. Discourse is perceived "as a field of regularity for various positions of subjectivity." (2009, p. 59) Therefore, in practice discourses allow for a certain way of seeing, understanding and commenting, where one knows through discourse as they allow for the production of certain and individual truths.

[11] Frayling's categorisation of design research is explained in chapter one.

"Critical Design" in opposition to "Affirmative design" (1998, p. 68). In this model, "Affirmative design" reinforces predominant social, technical or economic values, where as "Critical Design" strives for an alternative form of product design, positioned as a medium for inquiry.

> Design can be described as falling into two very broad categories: affirmative design and critical design. The former reinforces how things are now; it conforms to the cultural, social, technical and economic expectation. Most design falls into this category. The latter rejects how things are now as being the only possibility, it provides a critique of the prevailing situation through designs that embody alternative social, cultural, technical or economic values... Critical design, or design that asks carefully crafted questions and makes us think, is just as difficult and just as important as design that solves problems or find answers. (Dunne & Raby, 2001, p. 58)

Fundamentally, Dunne positions his approach as a form of social research that integrates aesthetic experience with everyday life through conceptual products. The approach goes beyond product optimisation. It uses estrangement to open the space between user and object to discussion and criticism. Through this, Dunne explores the narrative possibilities offered by designed object and how these narratives might afford forms of engagement with objects and the designer's commentary.

Like Dunne and Raby, Robach characterises critical design as being in opposition to affirmative design as it rarely offers solutions to the problems:

> Where the modernist design paradigm was imbued by the conviction that there was an objective, true and good solution to all problems, conceptual design emphasises problems' complexity. (Robach, 2005, p. 35)

Critical design does not offer practical solutions to everyday problems. Instead, it seeks to meet peoples' emotional and intellectual needs

> …a type of design that does not continually strive to make our lives easier, but rather trouble us an annoyance with the aiming to make us look critically at our lives and society in general. (Robach, 2005, p. 36)

Robach argues that critical design pushes disciplinary boundaries, increases awareness and transgresses limits. In its role as provocateur, our prejudices are revealed and boundaries become fluid or frayed. In her commentary she draws attention to the element of social criticism in critical design stating however that, "this criticism is not partisan if it is directed at big social problems such as consumption and production." (Robach, 2005, p. 36)

3.2 Meaningful presence and the aesthetics of use

Since 2001, Hällnas and Redström have been developing an area of study that is interested in engagement rather than error free optimised performance based on the premise that, to optimise practical functionality with respect to utilitarian perspectives is not enough. (2001; 2002a; 2002b). Thus, like Dunne they argue that aesthetics and especially modern aesthetics with its rich framework for critique may be used to extend the scope of product design and critically examine it from within practice through designing. (Redström, 2008) Discussing the 'aesthetics of use' in a context of pervasive technology and Interaction Design, they extend the concept of the 'post-optimal object' and the aesthetic experiences it aims to afford. They argue that aesthetics is the proper foundation for technology design as it turns from its focus on "efficient use" towards concerns for what they call "meaningful presence" (Hällnas & Redström, 2002a, p. 108). They suggest that the design and evaluation of an object is always done in relation to a definition of what the object is rather than what the object may mean.

> In human-computer interaction, we usually think of the computer as a tool for achieving certain ends, such as creating a document or searching for information. We thus evaluate the usability of computational artefacts in relation to criteria such as efficiency, simplicity of use, and ease of learning, based on relatively precise descriptions of what they are used for. We may call descriptions of things along these lines *functional* descriptions based on a general notion of *use*. This is what we do when we ask what a house, or a hammer, is and answer with a description telling what houses and hammers in general are used for (Hällnas & Redström, 2002b, p. 107).

These functional descriptions of objects focus on general objectives of use without any reference to the person using them in a specific situation. Hällnas and Redström argue that we can develop definitions of use and objects in another way:

> We can also answer the question of what a thing is in a different way, as when we ask a friend about a certain piece of furniture in her home and she answers that it is the table she got from her late grandfather. Clearly, it would be inappropriate to answer such a question with "it is a piece of furniture on which you can put this or that kind of object provided it does not weigh more than *X* kg." When we ask questions about this particular table, we do not ask for its general use, but about its existence in our friend's life, for example, its role or place. When we learn what it is, we get an *existential* description of what this particular table is to our friend, a description based on the table's *presence* in her life (Hällnas & Redström, 2002b, pp. 107-108).

This definition is related to a particular meaning given to a thing that they describe as the presence of an object in terms of how it expresses itself when the user encounters it

in everyday life. When we think about presence and the aesthetics of use, we can see artefacts as bearers of expressions rather than functions (2002b, p. 121).[12]

What Hällnas and Redström suggest is similar to Krippendorff's constructivist perspective on designing. His basic thesis is that users construct situated meaning through language when they encounter artefacts – a perspective grounded on ecological cognitive theory, radical biological constructivism and Wittgenstein's notion of language games. For Krippendorff, designers should employ second-order-understanding in designing if the artefacts are to be useful, usable and understandable by users. In other words, when designers can anticipate the meanings users will assign to an artefact during use, then they might successfully represent the user perspective in the design process (Krippendorff K. , 2006).

However, where Krippendorff suggests that the user might be understood, Hällnas and Redström, like Dunne and more recently Wilkie (2010), outline the complexity in trying to understand the user through empirical observations based on need and efficient use.[13] They argue that designers cannot anticipate the meaning users will assign to an artefact during use, and therefore, to represent a generalised user in the design process is at best a tentative aim.[14] (Dunne & Raby, 2001; Dunne, 1998; Hällnas & Redström, 2002a)

As Redström (2006) points out the subject has become more important than the object in much design and design research. The "subject" who emerges from user-centred design, however, is not a "humanist" subject; he or she is an "engineered" subject, who responds correctly to stimuli and thus can be shaped into a reliable member of mass society, whether conceived on consumerist or social-progressive grounds.

Anthony Dunne and Fiona Raby write:

> This enslavement is not, strictly speaking, to machines, or to the people who build and own them, but to the conceptual models, values, and systems of thought the machines embody.

---

[12] The notion of objects as bearers of expression with inter-subjective qualities is addressed in detail in the discussion on function in the following chapter.

[13] For a discussion in this area see: (Almquist & Lupton 2010)

[14] Considering the interpretation of how a user might use and assign meaning to an object as a hermeneutic problem, in Dunne and Redström's approach the hermeneutic is very much a radical model, when true and generalisable meaning is always allusive (Caputo J. D., 1987). In a different product design contexts this thinking corresponds with the practice turn in design i.e. from user orientated designing to practice orientated design or from prescriptive forms of product design and use to more relational and emergent perceptions of use. For examples see: (Shove, Watson, & Ingram 2007)

> User-friendliness helps to naturalize electronic objects and the values they embody. (Dunne & Raby, 2001, p. 30)

Users are messy, complex and unpredictable. By embracing the unpredictability in how a user may interact with an object, there is a need to observe a richer relation to our things, for example, through the exploration of engagement rather than efficiency in use, and through alternative forms of use that fundamentally challenge expectations of use and the user.

3.3 Critical distance

Shifting focus beyond efficient use, to embrace uncertainty, interpretation and meaning offers a complementary perspective that we can use to deepen our understanding of product design and establish a critical distance between object and human subject through poetic techniques of aesthetic, fiction defamiliarisation and estrangement.

Billing and Cordingley (2006) offer an example of this by employing critical design to explore notions of what they term "anti-simulation through design" (p. 101). They develop design proposals that exist outside dominant technological ideologies and comment on the unquestioned use and consumption of technological products. They have explored alternative roles for the electronic product moving beyond efficiency to encourage the user to question the presence of the technology in their everyday lives.

Figure 3.2 Jamie Billing and Tracy Cordingley *Headset of the Future* 2005

Drawing on concepts of simulation and transparency Billing and Cordingley comment on users' passive interaction with technological products, by offering design proposals that enable its user to see and experience passive interaction. They quite literally

construct a metaphor for how as users we passively consume and interact with objects in everyday life.

In 'Headset of the future' visual devices, blinker the user's vision through screens limiting it to their immediate environment, changing their environment to become a simulation of reality. In another device, the 'Para-functional phone' allows the user to "dowse spatial circuitry" (p. 103) to explore leaking information to be found in the electronic magnetic radiation, thus, raising questions regarding the security of personal information leaking from electronic products.

Since its establishment in 2005, the RCA's Design Interactions department under the direction of Anthony Dunne and staff including Fiona Raby, Noam Toran and James Auger has produced a body of work that utilises these methods to produce work informed by post-optimal design and the aesthetics of use. Notable examples from the course that have disseminated internationally in a research context include, Alice Wang's work (2009) in which she explores emotional and psychological needs of people in their everyday lives. She looks at how some objects magnify habits that we are too ashamed to admit and how others in everyday life simply illustrate irrational fears or anxieties.

Figure 3.3 Alice Wang, *White Lies* 2009: The weighing scale allows the user to lie to them. The further back you stand, the lighter you become. The user can gradually move closer and closer to reality.

Revital Cohen has worked on a range of projects exploring how users react to invasive technologies and the merging of technology and biology (Dunne, Cohen, & Wang, 2008; Dunne A. , 2010). With similar interest, Daisy Ginsberg has used methods of post-optimal design to explore the potential that synthetic biology might offer the future of product design (Ginsberg, 2010). Collaborating with scientists Ginsburg

represents critical design's shift into the scientific paradigm, where the practice of doing science is integrated into the design process with provocative ends. (Antonelli, 2010)

Figure 3.4 Revital Cohen *Assistance Animals* 2009. The project envisions animals transformed into medical devices. For example, a retired greyhound could be retrained and used to help a patient dependent on mechanical respiration.

3.4 Exploratory potential

The potential of post-optimal design is being recognised and embraced in the sciences and industry for its exploratory characteristics. Inspired by the merging of the design studio with the research lab to create a hybrid creative space, there are sporadic examples of projects that aim to foster this form of post-optimal practice. For example, James Auger while a Philips Research fellow has explored the potential that the sense of smell might offer design as part of Philips's design probes project. Intel's People and Practices research group commissioned and worked with the Design Interactions Department to explore future possibilities of e-money. The project set out to explore pleasures, opportunities, rituals and hazards, questioning the social and psychological dimensions of use and interactions with money through the production of artefacts. In another example, Studiolab proposes the creation of a new European platform for creative interactions between design and science. (Studiolab, 2011) Studiolab brings together centres of excellence in scientific research the arts and experimental design. In the project 'Impact' critical designers were partnered on ESPRC funded projects to represent the work being carried out by a range of engineers and scientists. (EPSRC, RCA, Nesta, 2010)

Figure 3.5 Gunnar Green, *The Spectacle of Paying* 2009. Visible gestures are used as a means of transferring and exchanging money face to face.

In a similar context, Broms, Bång, & Hjelm (2008) describe activity carried out at the Interactive Institute in Sweden. Working with the Swedish energy agency, the Power and Design research group used critical design methods to visualise electricity and electricity consumption in everyday life to promote environmentally positive behavioural change. The projects 'Static' and 'Switch'[15] were devoted to make energy consumption more apparent in everyday life with the goal of promoting change towards more efficient patterns of energy consumption.

Figure 3.6 Loove Broms, *AWARE laundry lamp* 2008. Switching on the lamp dries the clothes faster. The design draws attention to the fact that only five percent of the electricity used in a traditional light bulb transfers to light.

[15] See: Static: increasing energy awareness (The Interactive Institute, 2004-05) and Switch (The Interactive Institute, 2007)

These research communities look to critical design and see the potentials of its operation in an ambivalent zone between emerging science and material culture embracing alternative conceptions of function, post-optimal design and use to problematise possible futures and implications of research being carried out today. [16]

In these approaches, notions of use are extended beyond how the designer might expect or plan an object to be used to explore how it might be misused and consider the social and psychological effects that use might have. This is not to say that these aspects are not considered in an orthodox design process however, in a critical design approach, these aspects are considered before the 'actual use' of the object.

3.5 Propositional Design

In another use of critical practice that Start Walker (2003) describes as "Propositional Design he shows how design can be used to explore slower rhythms of interaction with products and spaces that leads to new and meaningful sustainable engagement and renewal of things. In this context, Walker is interested in re-conceptualising the nature of material culture in order to create more sustainable and meaningful approaches to design (Walker S. , 2006). Walker's research combines theoretical critique with objects to probe the meanings and implications of design for sustainability. Like Dunne with Critical Design, Walker presents Propositional Design as a form of critical practice concerned with exploring the nature and aesthetics of functional objects but with a specific focus on sustainability and understandings of substantive meaning, where particular technical function is not a primary concern.

Walker's take on sustainability orientates around economic viability, environmental care and social responsibility. He emphasises that approaching this topic through a historical perspective of pre-industrial and industrial stages, sustainable futures are difficult to conceptualise. He uses Propositional Design to explore potential alternatives based on sustainable principles. These principles allow aesthetics and non-rational, intuitive ways of knowing to inform our understanding of sustainability and to show rather than say – i.e. visualise alternatives in material form adding to our understandings of what functional objects are and could be. His approach leads to product concepts based on "re-seeing, re-valuing, temporary arrangements, and evolving permanence." (Walker S. ,

[16] For a detailed account of the projects discussed here see: Design Interactions Research (2011) available at http://www.di.research.rca.ac.uk/projects

2010) He argues in his research practice for the importance of substantive user values and recognition of their relationship to objects that develops renditions of material culture in which ethical issues are related to social exploitation and environmental destruction. Walker proposes that we need to create a material culture that is more considered, reflexive and suited to needs. Moreover, Walker argues that to make material culture more meaningful we need to make it more understandable to us.

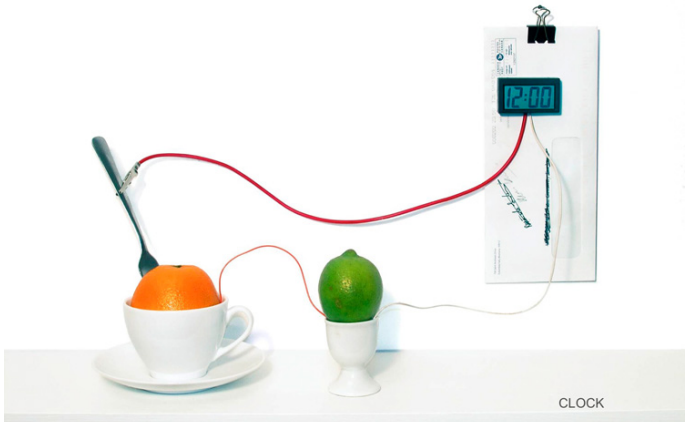


Figure 3.7. Stuart Walker, *Off the shelf Clock*. 2002. Functional components have been exposed rather than encased and a, natural battery has replaced the disposable environmentally harmful battery. Through his propositional approach, he playfully advocates product design that is more enduring.

3.6 Design as a medium

What the post-optimal approach and the use of ambiguity in critical design practice illustrates is rather than research activity within a design context typically being aligned with the sciences or discussions on design method, the objects produced can be seen as an affective rather than an explanatory medium. In this sense are evocative and should be open to interpretation.

Graham Pullin advocates this role for critical design. In the Ideo project 'Social Mobiles' Pullin and Crispin Jones, applied critical design to the disruption caused by people using mobile phones in public spaces. Describing a familiar function of critical design practice, he describes it as an exploratory practice wherein product design is used to ask questions rather than to propose solutions:

> Increasingly in research, design is valued not just for addressing or solving problems, but also for its role in making issues visible and tangible and therefore facilitating discussion and reflection. (Pullin, 2007, p. 726)

Mazé and Redström advocate this function and write that critical design practice as a method of research aims not at "simplification but diversification of the ways in which we might understand design problems, ideas, and boundaries." (Mazé & Redström, 2007) Bruce and Stefanie Tharpe (2008) outline similar concerns and define "discursive design" a type of product design that "treats artefacts principally as transmitters of substantive ideas, rather than as mere instruments of utility." (p. Para) As distinct from objects of art, architecture, and graphics – which can all be agents of discourse – they argue that products have particular qualities that offer unique communicative advantages. Because of the fluent understanding of design objects that exists in western consumer culture. This design work moves beyond traditional styling or commercial problem solving and in doing so these practices embrace a more expansive role for the designer as socio-cultural critic, educator, and provocateur.

Figure 3.8. Graham Pullin and Crispin Jones for IDEO, *Social Mobiles*, 2006. An exploration into mobile phone behaviours. Rather than create a set of phones that addressed aesthetic concerns of mobile phones, designer aimed to create five working mobile telephones that in different ways modify their users' behaviour to make it less disruptive.

Björn Franke focuses specifically on the use of product design as an affective medium to draw attention to problems. He investigates how aesthetic theories have proposed that an artistic approach to design can generate more immediate insights into philosophical issues. His research looks at the epistemic qualities of the object and how "artefacts allow thinking in tangible ways that might create a descriptive comprehension of complex issues" (Franke, 2009). Franke presents product design as a medium of inquiry where the aim is not to produce objects for use, but objects that increase understanding of the human condition in a world of technological artefacts.

His research is grounded on the understanding that we naturally understand the world through interacting with artefacts, and that design objects enable us to understand

matters more immediately than abstract theories. Billing and Cordingley share this position and describe a use of product design as a vehicle to communicate abstract issues and how it is suited to do this because of its form as popular language, established by a designed objects familiar aesthetic and proximity to the everyday (Billing & Cordingley, 2006, p. 101). Franke work evaluates the extent to which design can be used in this way by questioning the kind of knowledge such an inquiry generates and how this knowledge differs from that of other forms of inquiry. In this respect, it raises questions to what kind of research critical design would be.

In traditional research the human sciences explores the 'soft' dimensions of our existence – which social categories are projected onto an object – while the natural sciences concentrate on the intrinsic, 'hard' dimensions of the object. Critical design practice operates in both traditions with its hard technical 'things in the world' and its softer evocative and interpretative function. Critical design practice has moved away from a 'dual' character, where systems theory and applied psychology generated scientific approaches that could be contrasted with historical and critical approaches. Franke suggests the duality of objects should be reconsidered when we attempt to evaluate the quality of new hybrid objects that critical design produces.

In this respect, Franke draws on the Bruno Latour's writing on the quasi-object. The quasi-object equips us to develop a new model of knowledge that goes beyond dividing an object into two cultures. Rather than considering an object as a fact or a value, to see it simply as a stylistic form or social function, we must begin to grasp the facts and values as intrinsically inter-related wholes. Latour writes,

> Quasiobjects are much more social, much more fabricated, much more collective than the 'hard' parts of nature, but they are in no way the arbitrary receptacles of a full-fledged society. On the other hand, they are much more real, nonhuman and objective than those shapeless screens on which society – for unknown reasons – needed to be 'projected'. (Latour, 1993, p. 55)

Here critical design practice and its objects facilitate a way of knowing, exploring, projecting and understanding the relationship between users, objects and the systems that they exist in. Grand and Weidman (2010) share this perspective, their interest is in design practice, which draws on a range of perspectives from science studies (Knorr Cetina, 1999) to interpret scientific research as a constructive and creative practice as a form of design fiction. They present 'design fiction' – in which they outline critical design as a method or as an intersecting category of practice and research arguing for a

plurality of different perspectives and approaches to visualise potential futures and question the role of the object user and the networks of relations that might exist in that future.[17]

3.7 Design fiction

Design Fiction is closely related to critical design practice. However, it is better seen as a method or an approach rather than a field of practice. Design fiction is an approach that speculates about new ideas through prototyping and storytelling. A designed object can connect an idea to its expression as an instantiated object. These are like props or conversation pieces that help speculate, reflect and imagine. It utilises the 'diagetic prototype'[18] where objects are presented as things around which discussions happen. These material objects have a form however, they become real before themselves because they could never exist outside of an imagined use context.

> Artefacts become real through the activities of the agents who engage in the task of giving the artefact meaning proper to the idiom in which the agent operates" (Bleecker, 2004, p. v).

Design fiction is a conflation of product design, science fact, and science fiction. An amalgamation of practices challenges the expectations of what each does on its own and ties them together into something new. It is a way of materialising ideas and speculations without the pragmatic restraints of commercial product design.

The decisive factor in design fiction is the ability to see the world not only how it is, but also as it could be. A familiar theme runs through it. The focus is on the contingency of the status quo, the subversion of the incumbents and the criticism of the obvious. Design is utilised to develop new realities and review them with concrete images and objects, products and interfaces, characters and spaces, collections and productions. Design Fiction emphasises the real and fictional, evident and unexpected, real and possible, material and imaginary.

Design fiction looks to science fiction as a storytelling genre that creates prototypes of other worlds, other experiences, and other contexts for everyday life all based on the creative insights of the author. It is positioned as a practice that embraces the character

---

[17] For a discussion on design fiction see: The Swiss design networks 2010 conference Negotiating Futures - Design Fiction: with keynote speeches from Nicholas Nova, Julian Bleecker and James Auger.

[18] For a discussion on the diagetic prototype see: (Kirby, 2010) Diegetic prototypes depict future technologies to large public audiences a technology's need, viability and benevolence the technology only exists in the fictional world what film scholars call diegesis.

of science fiction and storytelling and challenges essentialist views inherent in design and science practice. Bleecker writes, "As much as science fact tells you what is and is not possible, design fiction understands that constraints are infinitely malleable" (Bleecker, 2010, p. 63).

In this context, Bleecker and Nova offer artefacts as creative interventions that present an alternative perspective on the way technology is developed and how technology develops us. These approaches reflect upon and question conventions by drawing intellectual concepts from critical political and social theories into practice (Bleecker & Nova, 2009).

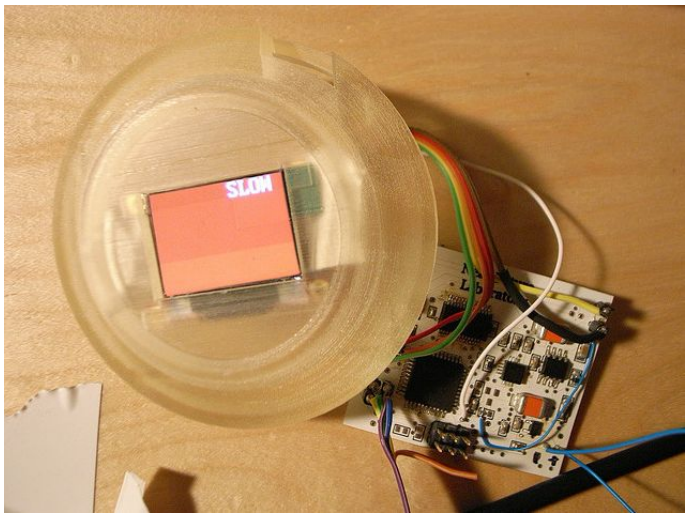


Figure 3.9. The Near Futures Laboratory, *Slow Messenger,* 2009. Bleecker and Nova's Slow messenger explores how in a digitally networked era contact is perpetual and ubiquitous. They comment through design intervention and playful experiment questioning how our connectivity often results in meaningless communiqués and dispatches.

While not describing their practices as design fiction, Dunne and Raby do outline the instrumental use of fiction in their projects. Their critical design proposals establish real and value fictions:

> If in science fiction the technology is futuristic while the social values are conservative, the opposite is true in value fictions. In these scenarios the technologies are realistic but the social and cultural values are often fictional or at least highly ambiguous'. (Dunne & Raby, 2001, p. 63)

This design fiction, real and values fictions that primarily concerns itself with technocratic concerns is regularly used in more speculative and projective forms of critical design practice.

3.8 Speculative Design

Speculative design is introduced here as a specific form of critical design practice that has developed out of critical design to focus on scientific and speculative concerns.[19] James Auger offers is advancing this filed in his current research and design activity. His research questions the contexts in which new technology is applied. Auger describes that a common approach in techno-centric domains is for the designer and technologist to focus on what technology can do and that they often ignore the contextual factors. Auger addresses the contextual issues that can turn a technology into a product and in turn modify the human experience of that technology. He does through the design of speculative objects that take emerging science and technological developments out of the laboratory and places them into domestic quotidian environments. Augers study develops a rationale for product design that leads to more immersive experiences mediated through interaction with objects, ultimately questioning when technology becomes too invasive in everyday life.

Auger suggests speculative design functions in two ways. First as a practice, it looks at advances in technology and projects them into future domestic settings. Through the creation of tangible prototypes, it is possible to 'project' the existence of these concepts into near reality. Secondly, it is a form of practice used to reimagine the technological present. Auger is not concerned with technological progress par se but the variety of possible technologies and paths of progress among which we choose.[20]

Feenberg (1999; 2002) suggests choosing between such paths of technological progression is essentially a political one and that modern technological advancement is not neutral as it embodies values and ideologies of that industrial society. Speculative Design allows us to map out alternative value systems and technological futures based on different values. This requires an alternative form of thinking from dominant technological and design rationality. Speculative and fictional forms of design enable the user to see and reflect on larger technological contexts, different technological futures and presents that raise questions about existing conditions and technological progression.

---

[19] Speculative design is discussed at length in chapter seven and positioned as a specific form of critical design practice in the taxonomy of practice. It is introduced here with reference to the literature and activity in the area and without the contributions from the interviews and analysis.

[20] See: (Auger, Alternative Presents and Speculative Futures, 2010)

In this way, the practice functions like science fiction writing, in that, it explores radical technological developments. For example, the work is similar to Gromala, Hayles and Sterling[21] who all speculate wildly, and materialise abstract technology. They analyse the circumstances within which designed artefacts are made, they integrate and implicate culture with stories that Crisp (2009) describes add substance and value to design function in the way of all good critical writing.

Crisp describes designers that use the rhetorical strategies of things made up – which includes many of those engaged in critical design practice discussed throughout this thesis – as Designwrights:

> Designwrights examine, evaluate and elucidate practices, cultural forces and artefacts. The characters and events they imagine into being often use unorthodox means, which is in part the power of the work. The delivery handily bellows where convention would only mumble. (Crisp, 2009, p. 106)

These deliver information, story, place and voice by way of creative responses to everyday experience, sometimes in hopes of helping change the tide. These designers make the familiar unfamiliar, and vice versa, determining to fuel desire and engage people to believe. Speculative design, and design fiction operates in this way. Moreover, it is notably similar to collaborative activities between scientists and artists coined SciArt. Krzysztof Wodiczko, Chris Csikszentmihályi, Natalie Jeremijenko, Eugene Thacker and Steve Kurtz[22] who have explored related notions of criticism in scientific and technical practice in their respective creative practices. These approaches reflect upon, question conventions by drawing intellectual concepts from critical political social and scientific theories, and embed them into artefacts to tell stories, expose truths and establish critique.

3.9 Critical making

In a context of speculative practice, Matt Ratto describes a similar process in 'Critical Making.' Critical making is "a mode of materially productive engagement that aims to bridge the gap between creative, physical and conceptual exploration." (Ratto, 2011, p. 252)The aim of 'Critical Making' is to use material production as part of a practice of concept elaboration within the social study of technology. A "Critical Making" project

---

[21] For examples see: (Sterling, 2005; Hayles, 2002; Gromala D. , 1998; Gromala & Bolter, 2005)
[22] For examples see: (Wodiczko, 1999; Jones, Wark, & Csikszentmihalyi, 2005; Jeremijenko & Thacker, 2004; Critical Art Ensemble)

involves three stages. First, a literature review and compilation of useful concepts and theories to identify specific ideas that to be metaphorically mapped to material prototypes and explored through fabrication. In another stage, groups of scholars, students, and stakeholders jointly design and build technical prototypes. Rather than being fully functional devices, the prototyping is used to extend knowledge and skills in relevant technical areas, as well as to provide the means for conceptual exploration. A third stage involves a process of reconfiguration, conversation and reflection. This process involves wrestling with technical prototype and exploring various configurations for the design. These are then used to express, critique, or extend relevant concepts, theories, and models. As with other critical practices in "Critical Making," the emphasis is on critique and expression rather than technical function.

A notable difference between critical making and other forms of critical practice is how it remains understated. It is framed as an epistemic pursuit rather than a showcase practice where work is designed for the gallery, purposefully flamboyant and exaggerated.

Critical making is informed by the social study of technology or science and technology studies (STS) as it takes scientists and engineers as active collaborators in understanding how specialised components of actually practiced science and engineering knowledge, in their local contexts, can be configured into broader and informed approaches to living in a complex world. (Fischer, 2006, p. 172)

3.10 Science and technology studies

The science and technology studies (STS) discourse illustrates a move in critical practice from critical theory, which takes as its interlocutor's idealised versions of how knowledge is claimed to be established. STS presents a new form of critique and even a critique of the critical tradition itself. Wilkie and Ward (2009) suggest that STS can provide theoretical and critical insight in design development and dissemination of issues relating to design and technology. The contribution of STS to critical and speculative practice is evident in the increasing number of scholars and designers subscribing to the theoretical tradition to ground their design research. (Bleecker & Nova, 2009; Kerridge, 2009; Grand & Wiedmer, 2010; Wilkie, 2010).

The convergence of STS and the area of speculative and critical design articulates and materializes issues of concern, and contributes to the formation of publics and

alternative futures. Speculative and critical design can serve as a resource for supplementing STS's conceptualisations of, and practices toward, public, engagement, and science. (Michael, 2012) Examples that have come to illustrate this convergence include, Tobie Kerridge's PhD 'Disentangling Speculative Design and Upstream Engagement' (Forthcoming 2012). This takes a critical view of how the techno-scientific development of new materials is partitioned off from the public. The study reviews roles for product design in engaging a broader public in a discussion on scientific and technological developments. Rather than being satisfied with the claim that the function of critical design is to engage audiences in debate, Kerridge problamatises the notion of debate, and of public engagement, addressing the questions, who engages with the design, in what contexts, and how the engagement is useful.

Ultimately, Kerridge's intention is to produce material outcomes that extend laboratory advances in science and technology into a public domain. He argues that in order to set up an instrument that allows this to happen, there is an attempt to make what he defines as speculative design's association with science and technology more embedded in the practice of science and technology development. He has done this by actively setting up design and science partnerships that engage broader publics to interrogate the methods and aims of scientific practice and an examination of the social relations that are intrinsically linked to the use of the material outcomes of design.

The 'Material Beliefs' project led by Kerridge exemplifies the intentions outlined in his PhD study. 'Material Beliefs' brought together designers and biomedical engineers to explore how the public relate to the scientists behind advancements in bioengineering (Kerridge, 2009). The project presents the idea that the tactics employed in critical design practice might act on the many issues surrounding bioengineering technologies and public engagement as an integrating and illuminating force by bringing different people together. Emerging biomedical and cybernetic technology is taken out of laboratories and put into public spaces including workshops, schools and music festivals. The project focuses on technologies that provide novel configurations of bodies and materials, and how product design as a tool for public engagement can be used to stimulate discussion about the value of these new scientific technologies.

Rather than focusing on the outcomes of science and technology, 'Material Beliefs' approaches the scientific research as an unfinished and on going set of practices, often happening in laboratories and separate from public spaces. Elio Caccavale's

'Neuroscope' proposes a novel relationship between the laboratory and the home, locating complex scientific processes within everyday life. 'Neuroscope' provides an interface for a user to interact with a culture of brain cells, which are cared for in a distant laboratory. Tobie Kerridge's 'Vital signs' prototypes demonstrate how bodies generate live behaviours in remote products he shows how body monitoring enables new biomedical applications and links these new technologies to debates about data security and child safety. The work is delivered as a quotidian object. They make fantastic science seem very normal, and at times even mundane to make it accessible to an audience that would not have access to under normal circumstances. In this way, they offer means for a more democratic discussion about the technology.

Figure 3.10. Elio Caccavale in collaboration with Reading University's Cybernetics and Pharmacology department. *Neuroscope* 2009. Neuroscope provides an interface for a user to remotely interact with a culture of brain cells.

In their respective approaches, Kerridge, Willkie, Bleecker, Wiedmer and Grand raise the question whether STS should be integrally woven into the techno-scientific design curriculum as a questioning counterpoint rather than in the tradition of a marginalised critic off to the side out of the way and easily dismissed.

Carl DiSalvo (2012) discusses Jeremijenko Ferrell dogs project (2002) in similar terms. The Ferrell dog project is a case example of how science can be made public and engages a non-expert community in discussion about concerns that they might not otherwise engage with. Through the project, Jeremijenko demonstrates the possibilities of creatively appropriating technology engaging a public in political issues surrounding science, in this case monitoring environmental pollution in the Bronx area of New York. In addition to being tools these hacked toys are platforms through which to

question, contest, and reframe notions of expertise in technology use and environmental monitoring. They challenge perceptions about how science is done and who does it. The objects constitute a public around them; they sit in a network of objects, users and discourse. This network is contingent on the hacked object and the meaning of the object contingent on the public that it constitutes[23].

The use of STS and the development of speculative design suggests a role for design processes as a way to develop cultural critiques of the biosciences, bioengineering, biomedicine, and environmental science in that its socialisation and positioning institutionally and intellectually push it towards public contexts. Moreover, it questions if these design practices are a better way to develop practical understandings for engineers, designers and applied scientists of their roles in shaping contemporary futures.

3.11 Ambiguity as a resource for design

Positioning design as an affective medium with intent to engage and audience to speculate on design in their everyday life and in the developments of new science and technologies moves product design beyond object centred approaches to situate the object in a broader network of social relations.[24] This 'relational design' perspective is discussed by Blauvelt (2008) who suggests that the participation of the user informs the product and by extension the designer's awareness of complex subtleties in complex user behaviours. Critical design practice embraces the relational open-ended product design. It reinforces relational qualities through ambiguity and paradox that encourage the user to interpret the object. A design practice that is aware of the systems and processes in which the discipline operates and which has the capacity to use the systems in critical ways. Therefore, in critical design practice the design objects are more open ended because of the ambiguous, fictional and speculative characteristics that move beyond optimisation and efficiency to and require some measure of interpretation and imagination on the part of the user. Such a role opens up for exploration, reflection and

---

[23] For other examples of the application of STS in speculative design see: (Auger, Swan & Taylor, 2010; Taylor, Anab & Swan 2010; Wilki, 2011; Gaver et.al 2011).

[24] The social and relational characteristics of design objects has been explored extensively in critical theories of technology and science studies e.g. Bijker (1995) explores the socio technical and political conditions that led to the development of the artefacts. A Socio-technical system is positioned as the interaction between society's complex infrastructures and human behaviours. In this sense, society itself, and most of its substructures, are complex socio-technical systems.

engagement. Key to establishing this engagement is ambiguity purposefully designed into the work produced through critical design practice.

The use of ambiguity is essential in critical design practice to overcome a conditioned familiarity with design and use. Jean Baudrillard who describes how commodities cultivate designs that support the production and consumption that capitalism requires illustrates conditioned familiarity. This process keeps dominant design and technological ideology alive, which becomes invisible and alienates from the real in such a system that normal objects are taken for granted (Baudrillard, 1981). However, when objects are made unusual and ambiguous, what was invisible and lost in the familiarity of the everyday is made visible. Critical design favours ambiguity and for the design work that critical designers produce anticipation is contingent. The design proposals produced in critical design practice aim towards defamiliarising and estranging affect in order to dissociate the user from their normal modes of use. It is critical designs potential to make things unfamiliar that allows us to start thinking about how we might use and design objects differently. This is significant in engaging an audience. Moreover, this disassociation provides insight into new experiences, beliefs and has the potential to generate new knowledge.

Ambiguity as a characteristic and estrangement as a method, shifts concepts of use beyond practical and efficient use, and conditioned routine interaction to more meaningful interactions. In this context, product design plays an affective role. Ralph Ball and Naylor describe this instrumental use of ambiguity in critical design practice:

> Paradoxically, paradox and ambiguity used in the right context can work to reveal and illuminate, and to reconcile opposites in a holistic way. They give shape to overlapping and contradictory issues which pragmatic and pedestrian delivery often fails to achieve. For an idea to really speak as an object, that is, a thing in three dimensions, it must have more than one dimension. (2006, p. 56)

Here, Ball and Naylor are pointing to dimensions of meaning and association what they describe as "correspondence and context" (p. 56) inciting understanding that supplement the more obvious and inescapable physical dimensions of objects. They write of "selective contradiction" (p. 56) that can add rich conceptual texture and sensations that stimulate thoughts hard to define in words. "Correspondences and context" is similar to Redström and Hällnass' "meaningful presence" (2002a) in that they aim to move use and function beyond the object towards existential relationships

between designer, object and user where the work becomes a vehicle for an exchange of ideas.

Bill Gaver was among the first in this community of practice to theorise this effectual design method. Gaver introduces 'Non-rational design' as a form of designing that is it about ideas evoking, communicating, developing and instantiating ideas in a form of prototype design through purposeful ambiguity. 'Non-rational design' rejects positivistic notions of design working towards a new efficient, optimised and perfect world. Gaver, Beaver, & Benford discuss the opportunities that ambiguity brings as a resource for design when designed into objects. They argue that ambiguity in design impels people to interpret situations for themselves; it encourages the user to start grappling conceptually with objects, systems and their contexts, and thus establishes deeper and more personal relations with the meanings offered. However, they cautiously write:

> Ambiguity should not be allowed to interfere with the accomplishment of well-defined tasks, particularly in safety-critical environments. But in the many emerging applications for everyday life, we argue that ambiguity is a resource that designers should neither ignore nor repress. (2003, p. 233)

> In a commercial practice product designer's work to eliminate ambiguity: their main effort goes into balancing clarity of use (making it intuitive) with richness of semiotic suggestion (making you like what it stands for). Both aspects of the design attempt to control the user's interpretation of the product – that is, to reduce ambiguity. The most important benefit of ambiguity, however, is the ability it gives designers to suggest issues and perspectives for consideration without imposing solutions. (2003, p. 240)

They introduce three types of ambiguity. These are useful as they inform the methods that critical designers use and the desired output and response of the project. "Contextual ambiguity" (p. 236) can question the discourses surrounding objects, allowing people to expand, bridge, or reject them as we see fit. Blocking the interpretation of a product in terms of an established discourse can create ambiguity of context. This is useful in spurring people to approach a particular system with an open mind, and more generally, to question the assumptions they may hold about the use of objects.

Figure 3.11 Jurgen Bey, *The Model world Maquette,* 2007. An example of ambiguity of context the Styrofoam model is presented as the finished design. The material is contextually inappropriate in the construction of furniture. Working at this scale enables him to remain on the ideas level, free from the logistical restraints. In his own words, "if one could work in a model world, reality would never bore us."

"Ambiguity of information" (p. 236) impels people to question for themselves the truth of a situation. A number of tactics are to enhance ambiguity of information. These focus on creating or reflecting uncertainties about information that are noticeable to people. The purpose of this may be merely to make the system seem mysterious or impressionistic, but more importantly it can also compel people to join in the work of making sense of a system and its context.

Figure 3.12. Dunne and Raby, *Foragers part of the project Between Reality and the Impossible,* 2010. An example of ambiguity of information. Dune and Raby propose a future where to tackle food shortages because of overpopulation through genetic engineering we would need to genetically

modify the digestive system in order to take on food that at present we are incapable of processing and forage for foods. Their proposal brings together trends in localised production, activism, guerrilla gardening and highly controversial scientific developments. In order that the design proposal is accessible, this information is delivered in a detailed synopsis and the objects contextualised by image and film.

Finally, "Relational ambiguity" (p. 237) can lead people to consider new beliefs and values, and ultimately their own attitudes. It creates the condition for a personal projection of imagination and values onto a design. This allows products and systems to become psychological mirrors for people, allowing them to question their values and activities.

Figure 3.13. Björn Franke, *Traces of an imaginary affair,* 2006. An example of Relational ambiguity. Traces of an imaginary affair allow the user to self-harm to feel self worth. The design relies on the understanding that self-harm is wrong but questions through juxtaposition tension and contradiction how harming can instil value and worth.

In each case, ambiguity frees users to react to designs with scepticism or belief, appropriating systems into their own lives through their interpretations. In the process of reacting to the system either positively or negatively, users engage with issues that the designer suggests. Thus, ambiguity is a powerful tool for designers to raise topics or ask questions while renouncing the possibility of dictating their answers and thus, the use of purposeful ambiguity and paradox is a method favoured in critical design.

By supporting this balance, ambiguity not only represents a useful resource, but a powerful sign of respect for users as well. Therefore, although not directly part of the design process, users obtain a strong position in critical design practice. Especially the individual, non-conformist appropriation of objects is most appreciated and encouraged and, as such, the relational and individual meaning-creation is an essential part of the design. There is a danger however, in designing purposefully ambiguous objects and as Gaver stresses, "ambiguity is not a virtue for its own sake nor should it be used as an

excuse for poor design". (2003, p. 240). We will see later in the thesis how these three types of ambiguity offers a means to differentiate between contemporary examples of critical design practice and inform the development of a taxonomy of critical practice in product design.

3.12 Conclusions

The chapter presents an account of the methods used in critical design and the theoretical reflections on the methods that allow critical design to function as research. In this context, there is a move from traditional understandings of function into realms of poetics, where the critical designer as researcher aims to encourage reflection on everyday life. They aim to show alternatives instead of saying alternatives, creating a culture that is more considered and reflective.

Through a discussion on a range of projects, key concepts in critical design practice were outlined. Post optimal design, Para-functionality and the Aesthetics of use were described as a means to illustrate how critical design functions as an affective medium.

The design examples and theoretical positions discussed throughout this chapter move beyond notions of reflective practice to explore broader roles for product design, where design is seen as an evocative an agent. The approaches integrate a mismatch of methods and expertise; artistic tendencies, scientific reasoning organised through designs disciplined processes. The work discussed sits at the intersection of 'design science' – which aims at explanation, and 'design art' – which produces affective outcomes, bringing together a range of methods and approaches with the intent of producing discourse.

Design operating in this way focuses more intently on evocative and interpretive use. Ambiguity is seen as a positive and constructive mechanism. Three types of ambiguity have been identified from the literature, Ambiguity of context, ambiguity of information and relational ambiguity. These are seen as instrumental in understanding how critical design works. Through these ambiguous designs, the user participates in constructing meaning around the object and these constructions provide evidence for problem finding in disciplinary and societal discourse. This chapter identifies ambiguity and non-rationality as key elements in prompting discussion on the contexts engendered in critical design proposals.

The chapter also outlined the propositional and speculative function of critical design practice. Rather than aiming for transparency, as in conventional practice led research, the approaches attempt to enhance the critical distance between the object and the human subject through the introduction of poetic techniques of aesthetic, fiction, defamiliarisation and estrangement designing ambiguity and producing non-rational objects.

Critical design practice working in this way is being embraced by the sciences and in sociological discourses. Moreover, designers are looking to theoretical traditions in these disciplines to inform the practice and extend its agency into areas beyond normal disciplinary bounds. The relational and ambiguous characteristic in objects of critical design opens discussion. In short, facts and solutions end debates, evocative and critical design opens them up.

The chapter contextualises critical design practice in relation to the scientific practice and the social sciences. The discussion on design examples has provided insight into the methods used in critical design and how the effect of these methods affords evocative characteristics that might contribute to develop new theoretical understanding.

Even though disciplines and fields of expertise external to product design increasingly embrace critical design practice, there is still work to do concerning the perception of the practice in how it contributes to product design as part of a disciplinary project. With this in mind, the following chapter addresses the barriers to the uptake of critical design as a legitimate form of product design. It reviews the work of designers and theorists attempting to advance the disciplinary understanding of critical design practice through research.

Chapter four

Barriers and bridges: seeing critical design practice in a disciplinary context

4 Barriers and bridges: seeing critical design practice in a disciplinary context

This chapter focuses on the barriers preventing critical design practice being seen as part of a disciplinary project. It goes on to review the work of designers and theorists that are attempting to advance the disciplinary understanding of critical design practice as a legitimate filed of product design through research.

The first part of this chapter serves to review the criticism of critical design by identifying inadequacies in the grounding of the criticism. The chapter begins by arguing how analysis of critical design practice often comes from perspectives developed in art and visual culture. The chapter aims to identify the limitations of analysing the practice from this perspective and argues the need for a more design centric focus.

The chapter goes on to discuss 'function' as a concept often used to ground criticism of critical design practice. The chapter shows that, the concept of 'function' offers insufficient grounds for criticism. It renders claims that critical design is not design because the objects do not function in a utilitarian sense redundant. The concept of function is explored to show that an object's function not only has the potential to extend beyond utility, efficiency and optimisation, but even in the strictest modernist sense function has always comprised characteristics that move into post-optimal realms, beyond efficient use, utility and practical specifications. The chapter argues for the relational, dynamic characteristic of function that supports seeing, and discussing critical design practice as other examples of orthodox product design is discussed.

The discussion then turns to focus on a body of research that looks at critical design practice specifically as a form of design practice. The intention here is to locate this study amongst such activity. The review of these projects serves to identify the differences between the methodological approach and focus of this research and those used in the studies presented. This chapter therefore begins to outline the uniqueness of this project.

Ultimately, the chapter identifies the barriers to seeing critical design as a form of design practice. It challenges these barriers before focusing on the work that has managed to address critical design in design terms and sees the practice as a useful, legitimate and

useful contribution to the product design discipline in terms of both research and practice.

4.1 Design Art

Criticality as a concept connected to the operations of design and culture has deep and much debated roots. For example, there is a long and extensive debate on criticality in Architecture, ranging from Baird's (2004) celebrated writings to Rendell's (2007) collection on the subject. Moreover, there is a long tradition of criticality in the art world, which ranges from artists performing as social critics, to exogenous and highly intellectual criticism of artwork itself. Such criticism is often steeped in the history of aesthetics, philosophy and art history. However, criticality in product design focused through design theory and research is still in its infancy, even if related discussions, papers and conferences have seen a clear increase throughout the last few years.

As critical design practice has developed, it made sense to look to disciplines outside product design for theoretical insight. Where efforts in this direction were undertaken, they were focused in areas such as aesthetics and visual culture. Because of critical design's proximity to conceptual art, art based critique of the practice emerged. This is evident in how commentators have characterised the practice as a form of 'designart', which according to Joe Scalan's definition, "could be defined loosely as any artwork that attempts to play with the place, function and style of art by commingling it with architecture, furniture and graphic design." (Scalan 2001 in. Coles, 2002)

In a similar way Hal Foster argues how in many examples of contemporary practice, design work is being consumed and traded as art, and so, design and art are running together. From this perspective, where design is consumed in the gallery space and critical design objects are available for purchase by price on application, critical design becomes subject to art discourse.

Placing critical design practice within this discourse, Betsky (2003, p. 41) describes the critical design as a hybrid between fine art and design. Ramakers describes critical design in terms that make it sound more like art than design, claiming that it strives "to arrive at new aesthetic and conceptual potentials" (2002, p. 41) and Jamer Hunt writes that critical designers explore "a messier emotional landscape of fear, pain, erotic attachment and loneliness" (2003, p. 68). Moreover, Hunt suggests that critical design operates outside functionalist frameworks because it develops a thesis that "the inability of

design to tap into this reservoir of emotional attachments impoverishes us." (2003, pp. 67-68).

Suggesting a hybrid form of practice, design commentator Rick Poynor writes that critical design blurs the boundary between design and fine art within the field of Industrial Design (1999, p. 31). He elaborates on critic Alex Coles[25] assertion that, when designers reflect on authorship, they invariably claim "some kind of right to their own measure of self expression" and in the manner claimed by artists, he claims "few have much to say about the role of design in society, or about anything else" (Poynor R. , 2008). Poynor has singled out the work of Dunne and Raby, and Hella Jongerius, as examples of designers who "exceed their functional role," claiming that, "they challenge expectations of conventional form and the possibilities of product design" (Poynor R. , 2005).

4.2 Design art and society

Countering such propositions, many examples of critical design practice do inquire into the agency of design and question its role in society. The designers do this by looking at objects of design in their social contexts, through astute observation of quotidian conditions and practices and they look at how design activity might inquire into, pass comment on or bring publics together to address social and technical concerns. In such scenarios, the designers are acutely aware of product design's agency in both disciplinary and societal frames. Moreover, the sociological perspectives that increasingly informs so much of the practice is steeped in deep studies that pay enormous attention to the social and relational character of objects.

In depth focus in these areas are relatively new territories for product design and over recent years, there has been an increasingly energetic dialogue between Design, Social Science and Scientific disciplines. Much of this dialogue has been aimed at enabling mutual understanding, identifying shared intellectual interests, and exploring common frames of reference. This is no more evident than in the work carried out at the Interaction Design research Studio at Goldsmiths University, who outwardly embraced

[25] Alex Coles has written on designart. In DesignArt (2005) Coles is initially comes into design and wants to find out what is happening and relate it to his own position and insight as an art critic initially viewing the territory, where design is traded as art and used to provoke debate as full of possibility. He very quickly revises his position describing this field as he would describe, genre of practice as problematic Design and Art (2007)

the dialog between design and sociology, through a number of collaborative critical and Speculative Design projects.

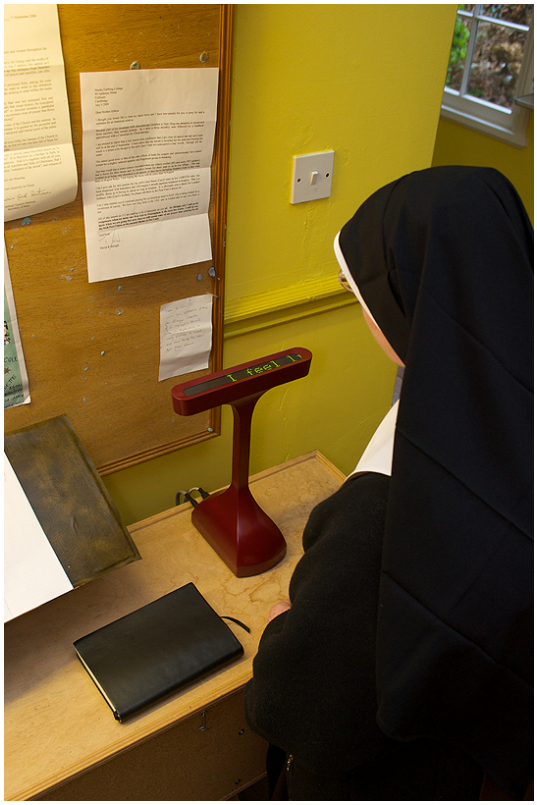


Figure 4.1. Interaction Design Studio Goldsmiths University London, The prayer companion, 2010. Investigating communication between people and objects Poor Clare nuns at a monastery in York UK are informed of real-time issues that need their prayers. The nuns isolated from outside world can see a scrolling ticker tape of current issues aggregated from news feeds and social networking sites.

The same can be said of the initiatives led by Natalie Jeremijenko in the environmental health clinic at New York University. The clinic is set up like the typical kind you would visit for an ear infection or sprained ankle, but its services are not of the medical sort. The project approaches health from an understanding of its dependence on external local environments, rather than on the internal biology and genetic predispositions of an individual. Visitors to the clinic – who Jeremijenko terms "impatients" because they are individuals who do not want to wait for legislative change – must make an appointment to discuss their environmental concerns. At the end of the consultation, they leave with a prescription not for pharmaceuticals, but for design interventions that they can do themselves. This might be anything from collecting data on the environmental quality of the local neighbourhood to creating a participatory public art project that increases community awareness of a particular concern.

Figure 4.2. Environmental Health Clinic New York, *The Green Light*, 2007. A prescription product developed for the Environmental Health Clinic. The light is prescribed for Impatients interested in changing their relationship to energy systems; improving indoor air-quality and developing experience with closed and coupled systems design

As outlined in the previous chapter this area between the social sciences and critical design practice is gathering much interest where Critical and Speculative Design work is being presented in social science forums.

The 'Speculation, Design, Public and Participatory Technoscience: Possibilities and Critical Perspectives' thread held at EASST 2010 brought together designers and social scientists to discuss technological development and public debate through design. In a similar respect, Anne Galloway is noted for organising platforms to discuss how grounded ethnographic and action research methods can be transformed into fictional and speculative designs that provide people the kinds of experiences and tools that can lead to direct community action in the development and implementation of new technologies.[26] Moreover, Alison J Clarke's 'Design Anthropology' (2011) documents a collection of accounts that discuss the impact of critical design practice in sociological terms. In Design Anthropology, Jamer Hunt (2011) reconsiders his earlier thesis where he aligns critical design with conceptual art and outlines that the problem with Critical Design now is that it remains close to an art practice, especially in its framing in the gallery space. She questions what impact it can have on real world design, which persists in operating in the name of opportunism.

Activity in this area undoubtedly illustrates that not all 'critical' designers aspire to be artists, and as the interviews in chapter five show, the designers who participated in this

[26] See: Ethnographic Fiction and Speculative Design held at the 5th International Conference on Communities & Technologies – C&T 2011, in Brisbane, Australia, 29 June-2 July, 2011.

study recognise that the work, only works, if it is viewed as product design and the objects seen to operate in a system of use beyond the gallery's white walls. When the designer's intention is that the work is seen as design, critique from the perspective of art can be distracting.

A problem with criticism grounded in art is that it feels like an attempt to fit critical design practice into a discourse where product design aspires to be art, or at least places design on the same critical footing. In such discourse, there are distinct examples of a narrow perception of design. For example, critics Foster and Coles uncritically adopt a theorem formulated by Baudrillard that states that design is limited to a sign exchange value and the symbolic dimension of objects. Furthermore, Poyner (2005) or Mermoz (2006) confuse the specificities of art and design practices in an unexamined adoption of relational aesthetics. When work such as that carried out by Jeremijenko and the Interaction design studio is discussed in these terms, when it is limited to a sign exchange or described as social art, there is a danger that the designers focus that underpins the design work is overlooked.

For critical design practice to work as commentary or inquiry, it is dependent on its objects being seen as product design. Looking at examples of critical design practice as art provokes a different discussion on and around the object than if, it are analysed, criticised and discussed as product design as Fiona Raby describes:

> While critical design might heavily borrow from [art] methods and approaches, it defiantly is not art. We expect art to explore extremes, but critical design needs to be close to the everyday and the ordinary as that is where it derives its power to disturb and question assumptions. […] It is only when read as design that critical designs can suggest that the everyday as we know it could be different – that things could change. (2008, pp. 95-96)

Figure 4.3. Dunne and Raby, *Energy Future Lunch Box,* 2004. Seen as an art object it might not shock or drive an audience to protest and inquisition. Its power comes from the user being expected to use the object. The proposition put forward by Dunne and Raby asks the user to create bio-fuel from human waste.

This said it is understandable that design critics might have difficulties with critical design practice. A traditional design's success is often measured against how well it has worked with certain constraints, the qualities of the idea and how well it has been executed, in frameworks where objects are 'fit for purpose' and of 'good form,' concepts that ultimately relate to the essentialist view of function and efficient use. Therefore, there is a challenge to develop means, understanding and language to critique critical design. When engaging in discourses that are under 'normal circumstances' positioned outside of the product design discipline, as often these projects do, there is a need to tread carefully and rigorously. By shifting a discipline into new areas, it becomes very difficult to analyse and critique. In addition, it is very easy for designers not to confront criticism by inferring that critics are interpreting a project's aims and purpose wrongly.

The danger of not questioning the practice is evident in the contradictions that can be found in recent discussions of critical design work. Christina Cogdell describes this contradiction in her review of the exhibition 'Design and the elastic mind' (Cogdell, 2009). In 'Design and the elastic mind', the design writer and curator Palo Antonelli presented over two hundred design examples that exemplified design's role in

presenting scientific futures. She presented examples of synthetic biological methods used in design that she suggested would curb destructive consumerism. Discussing the work of Oron Catts and Ionat Zurr, and their tissue-engineered 'Victimless Leather Jacket,' Antonelli uncritically positioned the adoption of living products as a sustainable organic design solution that would prevent the slaughter of cattle for leather, and therefore reduce the environmentally damaging cattle industry.

However, in publications describing their work, Catts and Zurr specifically focus on the problematic history inherent in the theory and practice of genetic technologies. The exhibition plaque next to their piece contained little mention of this even though the designers' state that the nutrient fluid that is a major requirement for keeping tissue-engineered products alive is made in part from the serum of a calf foetus, whose mother and it are killed just for its procurement. Antonelli's account is one examples of an idealised, uncritical, and somewhat optimistic appropriation of critical design practice. One further note on the Catts and Zurr example; the jacked 'died' five weeks into the MOMA exhibition further contradicting claims about sustainability.

The difficulty in critiquing and discussing critical design practice lies in the fact that unlike traditional design, critical designers primarily focuses on the communication of an idea rather than the development of a product or service, and as outlined in the previous chapter ambiguity and relationality are important for the design to work. There is always the burden of interpretation on the user's part. With this in mind, it is difficult to criticise something that like some art, defines its purpose as raising debate and communicating ideas. This in effect means that any criticism of the work can be perceived as debate and therefore seen as confirming its success. However, for critical design practice to work and contribute to the disciplinary foundation of product design it must never be beyond criticism itself.

4.3 Function in critical design practice

Moline (2006) and Mazé (2009) argue that an overly reflexive practice, discussed in the same way that art practice is discussed is counterproductive in developing a critical design practice that ultimately contributes to and expands the purview of product design as a discipline. Moline calls for a more design centric analysis of the practice. She argues that certain perspectives – for example relational aesthetics – polarises the designer as author as antithetical to the designer as service provider.

Similarly, Pullin articulates that, "…there are other design approaches between these two extremes" and argues that how "a richer shared vocabulary of the different roles of design in this area would be valuable." (Pullin, 2007, p. 731) This position is shared by Moline who questions the givens of functionalist debates in design and argues for an extended vocabulary for critical, conceptual and experimental practice:

> Despite the growing research in design history and contemporary practice, design criticism lacks density. Much design criticism is generally limited to reductive pragmatic and simplistic understandings of functionalism that emphasise market popularity and technical innovation to the neglect of the wider ramifications of design decisions. (2008, p. 2)

Moline's writing has two important implications for this research. Firstly, she presents a call for designers, commentators, design critics and theorists to develop the vocabulary it uses to discuss critical design practice, in terms that are not solely dependent on old arguments and knowledge from other fields of expertise. This research directly addresses this call in its contribution presented later in chapter eight. Secondly, Moline identifies how often the criticism of critical design practice from the arts and visual culture is grounded in a somewhat narrow conception of function. A narrow conception of function, limited to 'practical functionality' based on optimisation and efficiency is the largest barrier to seeing critical design practice as product design. Therefore, in order to develop critical design practice as part of a disciplinary project, there is a need to readdress what function means not only in the context of critical design practice but as it is commonly perceived.

Because of historical connotations function, as it is associated with practicality in use, seems like an easy concept to use to dismiss the critical design practice as something other than product design however, function is far from being a clearly defined term. This discussion challenges functionalist arguments against critical design practice in order to move the discourse beyond a narrow understanding of functionalism that

insufficiently informs much of the criticism of critical design practice. Function was discussed briefly in chapter three when the 'Post-optimal' object and 'Para-functionality' were introduced. In developing these concepts Dunne, looked to poetry and literary mechanisms for inspiration and as guiding principles. This was useful at the time in challenging design orthodoxy as it explicitly stood outside conventional functional frameworks in product design. However, in developing the concepts, Dunne makes little reference to literature on function. The following discussion grounds concepts of 'Para-functionality' and the 'Post-optimal object' with reference to the literature on function.

Function is widely discussed in literature on design e.g. (Baudrillard, 1996 ; Buchanan, 2001; Greenhalgh, 1990; Krippendorff & Butter, 1993; Papanek, 1984; Schiffer M. B., 1992; Ligo, 1984). The popular understanding comes from Louis Sullivan's (1896) "form ever follows function." and subsequently popularised in the modernist dictum, 'form follows function'.

In its commonplace understanding, function relates to optimisation and efficient performance. Lemoine (1988) describes how design is grounded in modernity, which is why from its beginnings the design of things and their function has been geared towards the principle of optimisation, i.e. the idea of a positivistically interpreted controllability of the world. This interpretation of function commonly designates the object's practicality in use. This has historically been the focus for designers but this strong faith in modernist ideology has provoked criticism, for example, Thackara writes:

> This particular debate, in which modernism and functionalism are conflated, has tended to divert attention from the aesthetic to the tactical; there is nothing inherently 'modern' about 'function' – design has always had a functional element. (1988, p. 23)

Dormer also questions the optimisation of products with regard to their function writing:

> This is what differentiates the 1980s from 1890, 1909, and even 1949 – the ability of industrial design and manufacturers to deliver goods that cannot be bettered, however much money you possess... Beyond a certain, relatively low price... the rich cannot buy a better camera, home computer, tea kettle, television or video recorder than you and I. (Dormer, 1990, p. 124)

Criticism of modernist functionalism can be traced back to an overemphasis on the physical and essentialist aspects of function perpetuated in the Bauhaus. But what

function is and considers, even in the strictest modernist 'FFF' sense of the term is questionable.

Ligo challenges the foundations of modernist functionalism in an excellent thesis based on an analysis of how function was discussed by modernist architectural critics. Ligo shows that function is not limited to practicality in use and classifies five very different types of function. Firstly, he writes of "Structural articulation" which refers to the object's material structure (p. 21). Secondly, "Physical function" which refers to the utilitarian task of the object (p. 37). Thirdly, "Psychological function" which he explains as pertaining to the user's emotional response to the object (p. 49). Fourthly is the "Social function" which refers to the nature of the activity that the object provides with regard to the social dimension (p. 61). Finally, the "Cultural-existential function" which has more profound cultural and symbolic characteristics that includes the existential being of the individual using the object (p. 75).

In similar terms, Archaeologist Michael Schiffer (1992) writes that an object can have three different sorts of function. The most commonly understood of these is "Techno-function," which is where the object is up to the job in hand. This is similar to Ligo's "Structural articulation" and "Physical function." Less frequently, there are "Ideo-functions" that draw from sets of abstract ideas that we share. This is similar to Ligo's "Psychological" and "Cultural existential function." Schiffer's "Socio-function" signals to others the sort of attitude that we hold. This is similar to Ligo's "Social function." Additionally, Schiffer writes that just as often the function depends on where the object is, who is using it and when, function comes about because of the system that an object exists in, where an objects function is defined by the context of use. Schiffer calls this the "System function." By definition, "System functions" cannot be designed into objects. The System function comes about only in the process of users interaction with the object as they create systems for objects to function in. (Fisher & Shipton, 2010)

Much work has been done in this area within Material Culture studies. For example, Daniel Miller argues that function is a dynamic concept and open to interpretation in different social contexts writing, "even the physicality of a material object in one social context might be read differently in anther social context and the systems of use that pertain." (1987, p. 109) Miller extends his argument to comment on how the labelling and classification of an object is used to indicate its function and the relationship

between the object and how it is used. However, he describes how objects often function beyond these prescriptions in different systems of use.

> In no domain is it as difficult as it is in the matter of function and utility to distinguish the actual place of artefacts in human practices. In many societies the classification and labelling of objects appears to indicate a close relationship between artefact and particular function. What is problematic about this is the common assumption that is caused by and in turn indicates some relationship of efficiency between the object and its use. (Miller, Material Culture and Mass Consumption, 1987, p. 116)

In keeping with this convention, Kristina Niedderer is critical of reading function from an object's form in her thesis introducing the category of performative object. She writes:

> Although the material form is one mode through which function becomes apparent, function is not equal to the form nor is it fully visible in the form. An object's function becomes fully visible in its second mode, in use, which is pinpointed in the definition of function as 'the special kind of activity proper to anything' (OED 2009). The definition emphasises function as an immaterial quality that is bound to the dynamic use of the object. (2004, p. 64)

Describing how functions emerge in use, Kroes argues that technical functions are related to physical features but just as often, they are subject to human intentions (2010, p. 85). Brandes, Stich, & Wender (2009) make similar arguments in their thesis on Design by Use in which they introduce the concept of 'Non Intentional Design.' They argue that objects are always subject to interpretation. This thinking is expressed in Practice-orientated design, which assumes the relationality of meaning, and states that values and meaning emerges in practice and relations between objects, skills and temporalities that in turn define an object's use.

> When technologies appear stable, when their design is fixed, their social significance and their relational role in practice is always on the move (Boiler, 1992). This suggests that moments of socio-technical closure is illusionary in that objects continue to evolve as they are integrated into always fluid environments of consumption, practice and meaning. (Shove, Watson, & Ingram, 2007, p. 8)

In such conceptions, function is relative, and situational, it is a dynamic property, a matter of concern, rather than something factual and fixed. Bruno Latour illustrates how an object might function in this way:

> It was as if there were really two very different ways of grasping an object: one through its intrinsic materiality, the other through its more aesthetic or "symbolic" aspects. The

> functionalist technical perspective sees the objects as a matter of fact an alternative is to see the object as a thing a matter of concern that is encompassing of object and system. (2009, p. 2)

These arguments suggest that an object's function cannot simply be read from its form, the way that it is labelled, classified or even from its physical properties. Function is a dynamic, immaterial and social property. An objects function is dependent upon the practices that situate it in a system of use. Function is subject to the designer's intention however; it is also always open to interpretation by the user.

The argument that function can be interpreted has important implications for criticism of critical design practice based on function. Function might be understood as the plan of action that the object represents and where designer and a user share their understanding about the intended purpose of the object. The function of an object can therefore, be as a symbolic communicating concept and a matter of understanding between the designer and user. Function might be understood as the perception of use, which emphasises the appropriation of the object through the user according to their particular needs, involving what Mazé describes as "…a processes of interpretation, incorporation, and appropriation into the user's lifeworld." (2007, p. 2) Therefore, like Schiffer and Niedderer, Mazé indicates that function has its counterpart in use, which means, although function and use are normally assumed to converge in the contextual understanding of efficient functionality, they do not have to do so. Consequently, function itself is open to wilful appropriation within use and subject to the intentions of the user. Thus, an objects function is physically constructed but at the same time is a social construction, thus objects of use have a dual ontological nature as Kroes states:

> An essential aspect of any technical object is its function; think away from a technical object its function and what is left is just some kind of physical object. It is by virtue of its practical function that an object is a technical object. The function of technical objects, however, cannot be isolated from the context of intentional action (use). The function of an object, in the sense of being a means to an end, is grounded within that context. When we associate intentional action with the social world (in opposition to causal action with the physical world), the function can be said to be a social construction. So, a technical artefact is at the same time a physical construction as well as a social construction: it has a dual ontological nature. (2001, p. 1)

In critical design practice, function moves beyond physical and technical function, optimisation, efficiency and utility, to operate in social, psychological and cultural existential ways. This function is advocated in Redström and Hällnas's "meaningful

presence," Dunne's "aesthetics of use," "Para-functionality" and "Post optimal design," and Ball and Naylor's "correspondences and context."

To reiterate what was introduced in chapter three, objects that are conceived through these constructs might not serve a practical function, the object's form might not illustrate its function, but it has a function through the assertion of the designer, the contexts engendered in the work and more importantly the user's willingness to read the object as product design. Through these factors, the context of use that a critical design object functions in is established.

In the most abstract examples of critical design practice, the intentions of the designer and the object's use are contextualised by writing, photography or film. These mechanisms are used to establish scenarios of use and the competencies required to understand the work as design. The design works through a form of rhetorical function and use. Such a proposition is not so far removed from some canonical perspectives. For example, Richard Buchanan compares design to rhetoric suggesting,

> The designer, instead of simply making an object or a thing, is actually creating a persuasive argument that comes to life whenever a user considers or uses a product as a means to some end. (1989, p. 95)

Rhetorical use is a type of imagined and fictional use. If function is considered as a socially constructed concept, or as a matter of concern rather than fact, then rhetorical use and para-functionality is as legitimate as practical function and actual efficient use. Through rhetorical use, critical design practice leverages practical functionality to achieve the primary goal of delivering a deliberate message potent enough to spark contemplation, discussion, and debate by allowing the user to imagine using the object in their everyday life.

In this context, Vilém Flusser has written how objects are not objective but inter-subjective, rife with the values and intentions of the person who designed them. In using objects, we interact with things projected by other people. Such a proposition does not just reside in the philosophical perspectives of Flusser. Writing from a more technical perspective van de Poel and Kroes share this understanding:

> Those who argue in favour of some kind of moral agency consider technical artefacts to be inherently normative: technological artefacts are not taken to be simply inert, passive means to be used for realizing practical ends. In other words, technological artefacts are considered to be

somehow 'value-laden' (or 'norm-laden'). These moral values and norms may be explicitly designed into these artefacts, or they may be acquired in (social) user practices.' (2006, p. 2)

Objects of use are therefore mediations between one person and another and are not just objects. Flusser asks if designing objects can be formulated in this way,

> Can I give form to my projected designs in such a way that the communicative, the inter-subjective, the dialogic are more strongly emphasised than the objective, the substantial and the problematic? (Flusser, 1999, p. 59)

Essentially this is what critical designers aim to do. It is through rhetoric and the acknowledgement of the dual ontological character of objects, the social construction of function and use, that systems of use are established. Within this system of use, where the user is willing to see objects of critical design practice as product design it *is* product design. However, here lays the challenge faced by the 'critical' designer: the ability to afford rhetorical and imagined use and establish the competencies required so the user understands the work as design.

In today's culture there is a barrier built on the doctrine of technical function grounded in efficiency and optimisation. The challenge for the critical designer is to overcome these barriers where at the same time the challenge for the theorist and critic is to acknowledge a broader concept of function in order to see and discuss critical design in a more design centric discourse.

4.4 Researching critical design practice

Today there has been a notable shift in perceptions of what product design is and what it is capable of addressing. Product design now occupies a position where it should be confident enough as a discipline to be a vehicle for fulfilling social needs and for expressing independent thought. Through a more design-focused criticism, the value of critical design practice and its contribution to the product design discipline might be revealed. However, Moline and Mazé describe that without formal analysis and serious intervention from the design research community critical design practice might be consumed as a purely superficial form of product design. They recognise the need for design to reflect on its own products and practice and the impact of its products and practices as tools of inquiry and commentary addressing Bonsiepe concerns:

> We can hardly get to the root of design using art theoretical concepts. Design is an independent category. Located at the interface of industry, the market, technology and culture (living practice), design is eminently suited for engaging in culturally critical exercises that focus on the symbolic function of products. (Bonsiepe, 2007, pp. 30-31)

Activity focused in this way would address Raby's claims that there is a need for analysis of the practice to avoid it been seen as a form of design entertainment. This also supports Pullin's call for a richer vocabulary beyond affirmative and critical design. In response to this, there is a range of scholars who to research focuses on the practice and who extend the vocabulary through a design discourse that considers the practice in a context of other design practices.

One of the most comprehensive studies in this area is 'Occupying time designing technology and the temporal form of interaction' by Ramia Mazé (2007). Mazé discusses critical practice through traditions of anti-design to examples of contemporary critical design practice. Her thesis is structured around a thematic scaffold of concept design, conceptual design, and critical design, which broadly articulates the state of critical practice that deliberately crosses boundaries into other domains such as Science, industry and art to allow for multiple and competing concerns to orient alternative interests values and concerns. (2007, p. 226)

Concept design is discussed in a tradition of scenario building and industrial practice, world fares and future gazing. Conceptual design is discussed in terms of conceptual art and radical craft. Critical design is discussed as outlined by Dunne and the work of the RCA's Computer Related Design Studio. She discusses critical design practice's relationship to the operational – what she considers as practice – and intellectual basis – what she considers as research – of design.

Mazé aims to dissolve this dualism incorporating critical design as research and practice into a homogenous disciplinary model writing that critical practice might offer a new development of the conceptual and theoretical frameworks in product design as an intersecting category of research and practice:

> Certain conceptual frameworks within critical practice such as 'object as discourse' and 'design as research' provide a basis for thinking about how to combine intellectual [design research] and operational [design practice] models of practice for contesting and developing the design discipline from within design practice through the continuing development of a critical tradition. (Mazé & Redström, 2007, p. 8)

In this context, critical design practice is close to what Krippendorff describes as "designing the design discourse" (Krippendorff K. , 2006, p. 32). So in designing the discourse, critical design practice can be described as a form of critical thought amongst other forms of critical thinking.

In line with the arguments made above, Mazé identifies the problem with critical design practice if it is not taken up as a disciplinary project. She highlights the danger that if there is no extension beyond commentary or critique, critical design "might tend towards an overly self reflexive and hermetic autonomy – design for designers." (Mazé & Redström, 2007, p. 8) She also argues that critical design practice challenges the boundaries around design and how expanding the purview of design means that intellectual and ideological bases are multiplied and distributed.

In similar terms, Walker (2010) describes how design carried out from within an academic context can contribute to the product design discipline as it confronts contemporary issues and complex problems:

> …we must find ways to renew the profession by developing agendas and propositions that envision what is desirable, meaningful, and sustainable; the responsibility to do so lies partly with those in the profession itself and partly with the academic institutions that educate and train it's future participants. (2010, p. 97)

He argues that design in academia has the opportunity to focus on fundamental, conceptual design in ways that are often more difficult to justify in corporate culture:

> Design at universities has the capacity and freedom to critique current approaches, examine their insufficiencies, and explore new possibilities in ways that are removed from the day-to-day priorities of design consultancy and, in view of the urgent requirement for alternative, more benign ways forward, it has an obligation to do so. (2010, p. 98)

In this process, the reflective activity from fundamental research has the potential to feed into commercial design and applied research. The model presented by Walker depicts a similar approach to that developed by Bowen (2009). However, in contextualising critical and speculative practices, Walker identifies how it is important to recognise:

> …that the contribution of Speculative Design work within academia is not to develop potentially viable "solutions" that can be tested or measured against some predetermined, pragmatic criteria. Rather, its purpose is to probe and challenge our assumptions and to explore other, imaginative avenues that appear to be worthwhile. (p. 98)

As argued throughout, the objective of this kind of work is to raise questions. An important point recognised by Walker is that critical design practice can be situated as a form of fundamental research:

> …informed by emerging research in other fields and that such creativity based research is driven by envisioning new possibilities, and differs in emphasis and purpose from reactive problem solving. (p. 98)

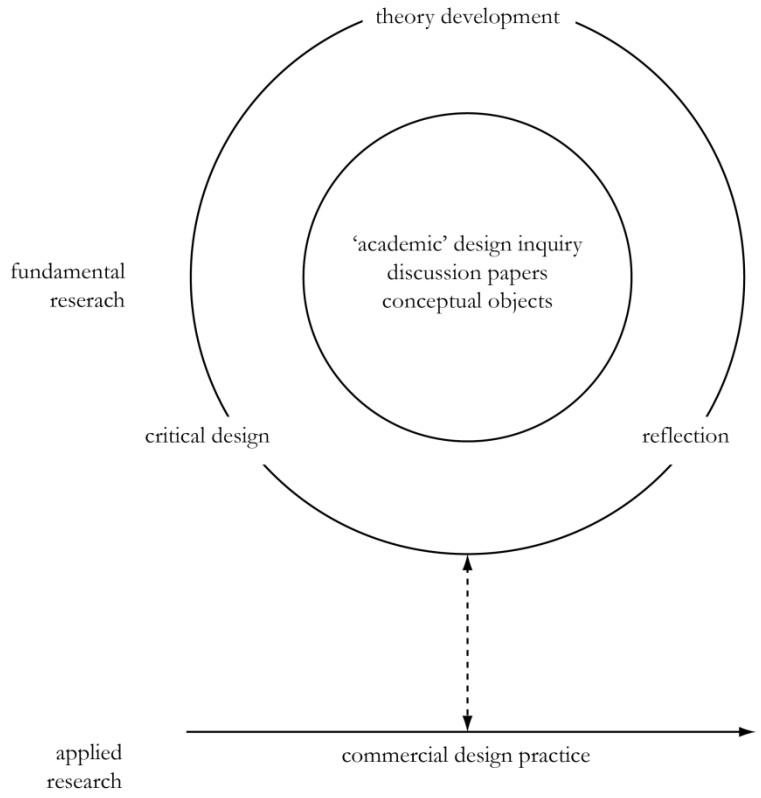


Figure 4.4. Stuart Walker, *Fundamental design research in academia,* 2010.

Relating to more orthodox expectations of product design i.e. design as problem solving rather than problem finding, Bowen (2009) research into critical design looks to critical design methods to develop a rationale for using provocative design proposals to foster the innovation of human-centred product ideas. Bowen's methodology for critical design differs from other approaches. It is human-centred and he aims to use the discussion that the critical artefacts provoke instrumentally in a mainstream design process. Bowen develops an approach similar to action research wherein he describes cycles of action, using 'critical artefact methods' in design projects and reflection through action. Bowen uses workshops where stakeholders engage with critical artefacts. He uses observations of this engagement to develop his understanding of user

needs. Bowen positions his 'critical artefact methodology' within a context of participatory design, as the methodology depends upon a progression from presenting users with critical artefacts that provoke reflection, towards more 'prototypical artefacts' that identify relevant needs for evaluation. (Bowen, 2009, p. 1)

In his thesis, which documents the development and implementation of a 'critical artefact methodology', Bowen raises important questions towards critical design as a form of research. If the aim of the design is to prompt or engage in a discussion on the contexts engendered in the designs, how do we document and use that discussion. Who engages and what comes from the engagement? In his methodology, Bowen works to address these questions by controlling the user group exposed to his critical artefacts in the workshops. He works with lead users[27] identified as most likely to engage with the method.

The methodology functions on the premise that the co-reading of critical artefacts means that the understanding of the artefacts can be of future or latent needs. This allows the user to explore alternative needs, practices and products by broadening their understanding of what is possible. He integrates the findings of these monitored explorations into an iterative design process.

The nature of Bowen's thesis and the application of critical design practice in this instrumental context create tension. His use of critical design to inform an orthodox design seems a contradiction in terms. Bowen presents little alternative to a commercial product design ethos in his strategy to generate ideas. Using critical design as a method in this sense strips it of critical tenure, and although critical design methods developed by Dunne and Raby (2001) and Gaver and Martin (2000), inspired the methodology, Bowen's approach is in service of client agendas.

In his thesis, Bowen offers a useful methodology for participatory design and a valuable contribution to processes of idea generation and innovation. However, the instrumental approach moves beyond the field of critical design practice back into orthodoxy driven by need efficiency and optimisation. Bowens endeavour illustrates the difficulties when

[27] Lead users are users of a product or service that currently experience needs still unknown to the public and who also benefit greatly if they obtain a solution to these needs. They are more likely to, identify, adopt and be receptive to innovative objects and systems of use. See (Von Hipplel, 2005)

trying to develop and apply a method for critical designs in a more mainstream idea of product design.

The most useful implication of Bowen's research is in its implied critique of critical design practice and the challenges faced by critical design. Firstly, he illustrates the difficulty of framing critical design as design research. If critical design is framed as research then it must conform to some measures of rigor and validity. When there is no evidence of systematic reflection on or around the work claiming critical design as research is problematic.

4.5 The paradox of critical design in commercial use

The critical social theorist Calhoun suggests that critical reflection on the way things are, with their underlying, often hidden factors, enables exploration of other possibilities, and can allow an improvement in the way things are (Calhoun 1995). How these critical practices improve the way things are is not an easy subject. On the one hand, enabling, affording, and evoking critical reflection, discussion, debate, and speculation is typically considered an improvement in itself. On the other hand, to make critique meaningful, it must be directed at those who contribute to the culture that is being critiqued (Koskinen et al. 2011). This would, however, necessitate a movement out of the gallery, and the perception of critical design as intellectual debates 'by designers for designers'. It would also shift the role of debate from an end to a means. This instrumental use of critical design has been explored in design research. Sengers suggests that critical reflection 'on unconscious values embedded in computing and the practices that it supports can and should be a core principle of technology design´(Sengers 2005, p.49), and Bowen shows how reflection evoked through critical artefacts can improve practices of Participatory Design (Bowen 2009). In striving to develop these changes in culture and to probe consumer expectations there are a limited number of examples where critical design has been used in industry. These are important to consider as the application of such practice works towards legitimising critical design beyond the gallery.

Philips carries out the most notable activity in this area. Paul Gardien's (2006) design-led horizon innovation model proposes a framework that Philips's designers use to think about short, medium and long term, futures. Horizon 1, horizon 2 and horizon 3, reflect short, medium and long-term futures. Each horizon explores a different time space and therefore needs a different foresight in design approach and input. Horizon 3

is about radical innovation and transformation and creates a space where critical design might have commercial application in its ability to provoke debate and test societal expectations. Deliverables range from scenarios and narratives to the creation of experience prototypes. [28] An example of this is James Augers *Smell* project (discussed later in the thesis). We have also seen earlier in the thesis how Intel and Microsoft have initiated briefs with research centres and universities to carry out work that might not align with core business but there is an interest to probe future social political and economic expectations and possibilities. In such activity, the commercial sector recognises designs ability to visualise and make issues tangible through scenarios of use and object form.

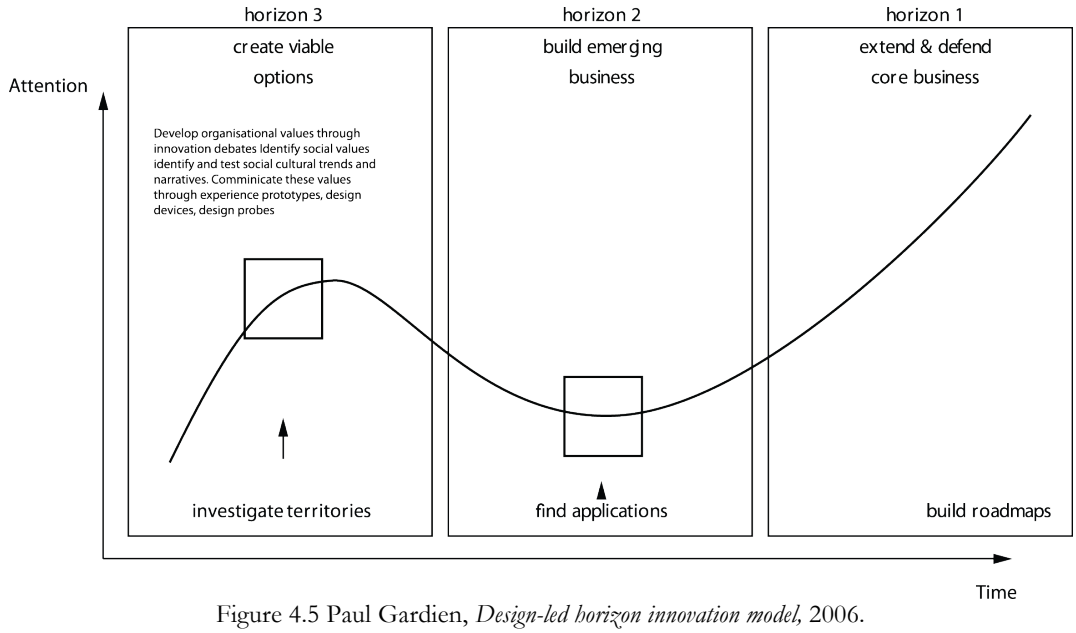


Figure 4.5 Paul Gardien, *Design-led horizon innovation model,* 2006.
Critical design activity facilitaeded in horizon 3

[28] see: http://www.design.philips.com/probes/whataredesignprobes/index.page

4.6 Modeling the field

Considering how Bowen, Walker and Mazé amongst other scholars and designers cited above position critical design practice, it might be said to operate as an intersecting field of research and practice – discipline and profession. Daniel Fallman (2008) visualises this space in a model that not only refers to academic research, but also includes knowledge gained through practice-based and explorative avenues. Fallman's model can be used to plot the position of activity in between three extremes: Design practice, Design exploration and Design studies. The differences between these three types of practice are primarily in tradition and perspective, rather than the methods and tools being used.

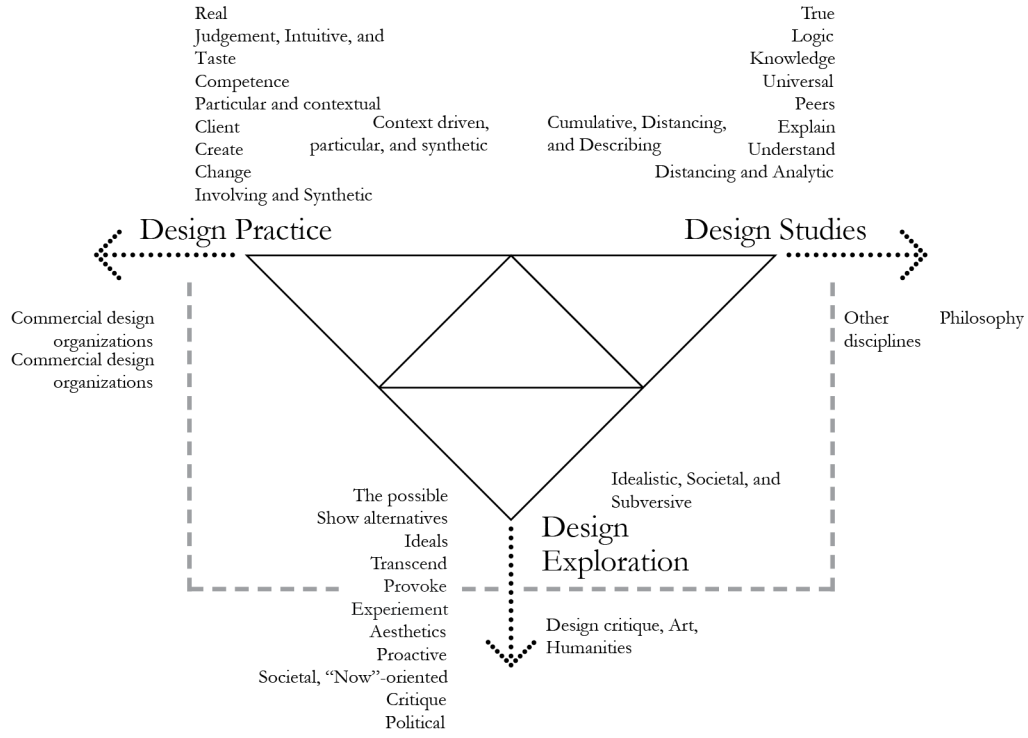


Figure 4.6 Daniel Fallman. *The Triangle of Interaction Design Research*. 2008.

In Fallman's model, 'Design Practice' denotes activities that are similar to commercial design work, carried out in commercial consultancy but with a difference in that, the researcher becomes engaged in a particular design practice with an appropriate research question in mind. The research question is developed and explored through a reflective – first-hand experience either of the tools or processes, or proactive manner – through an already established research agenda that seeks to change how a specific technique is used. 'Design Studies' most closely resembles traditional academic, research where the aim is to contribute to the intellectual tradition and body of knowledge. 'Design Exploration' is similar to design practice but differs in one key point, in that it aims to

explore 'what if' questions through the process of designing rather than by answering a particular research problem. Design exploration is a way to comment on a phenomenon by developing an artefact that embodies the statement or question that the researcher is attempting to critique. Therefore, Fallman's Design Exploration acts as the site for critical practice in this area of activity:

> …the typical client is the researcher's own research agenda. These projects are often self-initiated. Design in this area neither is typically driven by how well the product fits into an existing or expected future market, nor based on the observed needs of a group of users. Rather, design becomes a statement of what is possible, what would be desirable or ideal, or just to show alternatives and examples: "design exploration is a way to comment on a phenomenon by bringing forth an artefact that often in itself, without overhead explanations, becomes a statement or a contribution to an on going societal discussion. (Fallman, 2008, p. 7)

In another mapping exercise, 'Design Act' (2009) is a forum to highlight and discuss contemporary design and design research practices that engage with political and societal issues. It traces current and historic tendencies towards critical practice that engages ideologically and practically providing a forum to discuss these with practitioners, educators, curators, critics and others in the fields of design. Rather than posing a critique from the outside, Design Act explores design methods, aesthetics and techniques that mount what Mazé notably describes as "criticism from within" – that is, designers that engage with social and political ideas in and through action within their own practice.

Design Act expands conceptions about what design is and catalogues examples that might look like pedagogy, policy or art rather than conforming to the familiar objects and objectives of product design. The website and recent publication (Ericson & Mazé, 2011) states that as definitions of design are changing, the forums and formats of design discourse need to be reconsidered.

'Design Act' documents projects that inquire into the social agency of design. Alongside examples of critical design practice, it includes examples of work that are described as Socially Responsible Design. Socially Responsible Design can be described as being critical of prevailing design orthodoxy, because it is driven by social concerns over fiscal gain. From the emergence of Papanek's 'Design for the Real World', through feminist design, environmentally sensitive eco-design, to the focus on sustainability, product designers have been increasingly active in creating solutions and addressing issues

relating to social responsibility. First outlined by Papanek (1984), refined by Whitely (1993) and implemented by the likes of John Thackara and Hillary Cottam (UK Design Council Red; Participle), Socially Responsible Design is often structured around 'design thinking', and its ability to address wicked and complex problems[29].

Socially Responsible Design contains many ideas about how to deliver problem solving through design practice, or how to appropriately address and serve users – rather than consumers, in the name of society. Gamman and Thorpe (2011) outline the limitations of definitions of Socially Responsible Design and argue that social design does not facilitate design activity that makes social commentary through objects that seek to change the consumer system. Advancing the discourse in Socially Responsible Design, they have introduced Socially Responsive Design. Bülmann and Wiedmer (2008) write that critical design is a form of Socially Responsive Design positioning critical design as a practice that acts as a synthesiser for change in societal concerns. In these accounts the scholars attempt to theme design thought, methods, and concepts beyond commercially orientated practice and delineate the conceptual horizon against which designers operate critically.

4.7 Design at users

Sanders (2006) and Stappers Sanders, (2008) support positioning critical design practice against other forms of social design. However, they position critical design as a form of design led research in the expert mind-set. This suggests that critical design is considered a 'top down' practice where the user is seen as a reactive participant rather than an active participant in a project. This useful distinction separates critical design from other forms of social design practice. In socially responsible design, there is increasing emphasis on user participation in the design process. Such collaborative practices move design from design for users to design with, and even design by users in co-design practices. These models of practice are illustrated by the design methods employed by the Helen Hamlyn research centre, Liz Sanders's Make Tools initiative and the move to Open Source product design, for example Open IDEO.[30]

---

[29] Wicked problems cannot be solved absolutely; the situation can only be made 'better' or 'worse' – the terms of which depend on who is evaluating the solution. For writing on wicked problems see: Rittel, H., & Webber, M. Dilemmas in a general theory of planning. Policy Sciences. (1973) 4, 155-169. In a design context see: Buchanan, R. Wicked Problems in Design Thinking. Design Issues, (1992). 8 (2), 5-21; Coyne, R. Wicked problems revisited. Design Studies, (2005) 26 (1), 5-17.

[30] See: IDEO (2011) Open IDEO: http://www.openideo.com/about-us

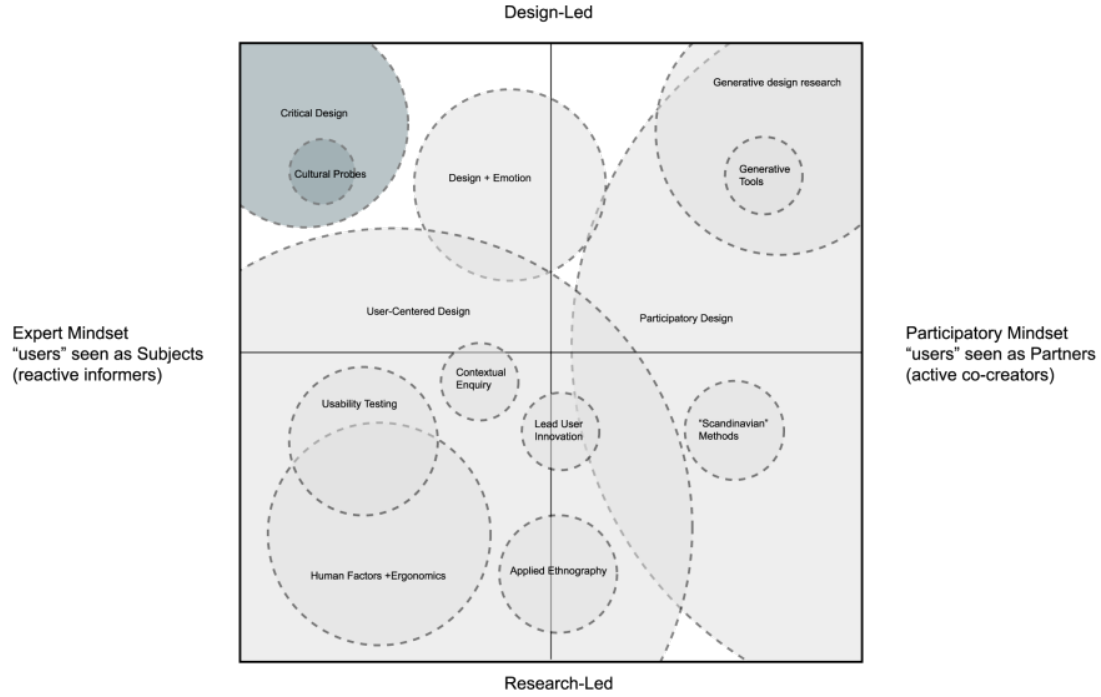


Figure 4.7. Elizabeth Sanders, *An emerging territory of design research and practice*, 2005.

Critical design practice as it is discussed in this thesis – and later presented as, Associative, Speculative and Critical design are not framed as forms of Socially Responsible Design. Socially responsible design is 'less fictional' than critical design practice, it orientates around actual needs that exist in society today. Therefore, this is one of the most distinguishing factors between this study and the 'Design Act' project or Bülmann and Wiedmer (2008) analysis. Critical design practice considered and reviewed in this thesis functions as commentary rather than design as an immediate tool for change.

Additionally, as Sanders and Stappers position the practice in their conceptualisation, critical design practice – interpreted in this research – is positioned as a design led practice in the expert mind-set. In this respect, it is seen as being far more subjective and arguably indulgent than other forms of socially focused design practice. The character of critical design practice can be aligned with Vilém Flusser's argument – reductio ad absurdum – that design is obstructive and the most responsible way to design is to be less objective, to design for matters of concern and to communicate inter-subjectivity. (1999, p. 59) The matter of concern in critical design practice is creativity, inquiry and statement, rather than technical or social innovation in service to actual needs and this illustrated through the various accounts outlined above that position critical design practice as proposition and problem finding rather than problem

solving in disciplinary and societal frames. Critical design practice is considered an authoritative form of practice in this research. The designer performs as author and critic, and although this has changed slightly in Speculative Design practice – where designers collaborate with experts – there remains an authorship over the work. Considering this critical design practice can be described as 'design at' users where a polemic commentary is directed at a user group to addresses concerns that may not be overtly apparent or perhaps may not yet exist.

4.8 Directing critique through design practice

Considering the discussion so far, it is appropriate at this point to outline how the designer as author directs their critique and situate critical design practice's position in a disciplinary context. The discussion outlined in this chapter and chapter three asserts that that critical design is a form of product design. It is not however considered an orthodox form of design. Traditional, orthodox and mainstream design practices form a disciplinary core. However, with the emergence of new politically and socially engaged practices the purview of product design is being challenged and the discipline is being extended into new territories described here as peripheral forms of design.

It is in the peripheral zone where critical design practice operates. Working as a boundary activity, the designers focus their commentary through the production of design work to focus their commentary in either of two directions: Inwards towards disciplinary concerns or outwards towards broader social and technical concerns. The designers critique or inquiry comes from within product design practice. It is focused either on itself, 'within', or from within focusing outside normal disciplinary bounds 'without'. In this model, the practice is hybrid in its character, a blend of theory and practice, a method of design research and design practice. Product design functions as a form of discourse, as an exploratory tool and an affective medium. Facing not only inwards towards disciplinary foundations, the designers' criticism, commentary and inquires reach out to implicate other domains involved in the social construction and consumption of design this includes a range of concerns, ideas, and practices in use, external to what might 'normally' considered product design.

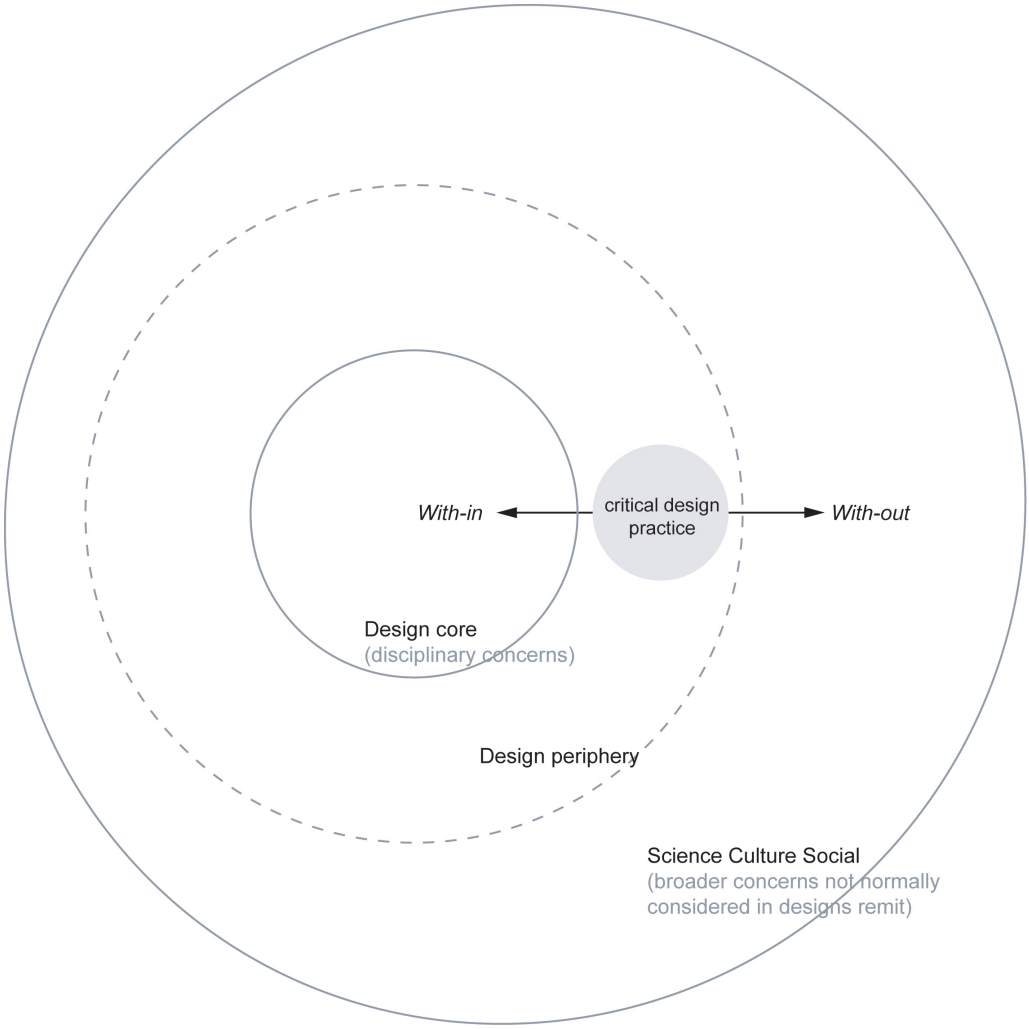


Figure 4.8. Malpass (2010). Operating context, focus of critique, commentary or inquiry: critical design practice operates in a peripheral zone at the boundary of product design practice.

4.9 Conclusions

This chapter has shown the recent attempts to develop critical design practice as an academic form of inquiry by questioning how it might work as research in design and beyond. Although research into critical design practice is increasing, historically analysis of critical design comes from art and is grounded in theory more familiar to art and visual culture. The chapter has illustrated how analysis from the perspectives of art and visual culture is generally based on a somewhat limited concept of function. Such a perspective omits experimental, explorative and discursive forms of design practice.

The chapter has challenged analysis and categorisation of critical design as a form of art, based on a 'utilitarian' concept of function. With reference to the literature on function, the relational and dynamic characteristics of function have been discussed in order to ground key concepts in critical design practice. This discussion illustrates that even the most rigorously designed practical functions will be interpreted. Function is a dynamic quality and open to wilful appropriation. Therefore, if both the designer and user are willing to see examples of critical design practice as design then the work produced is design.

The discussion has outlined the need for a more design centric focus on critical design. For critical design to work the work needs to be seen as design. As it stands the majority of theoretical engagement is grounded in art discourse. Discussing the objects of critical design practice as objects of design provokes a different discussion on and around the object if it were discussed art.

The chapter has outlined the need to engage a broader community in the discourse on critical design practice. This might prevent the practice becoming overly self reflective and subsumed as symbolism and restricted to a cultural context. The discussions on the characteristic of function equips observers of critical design practice to overcome the barrier to seeing critical design practice as product design based on 'practical functionality' and discuss the practice in design terms. For example, moving the discourse beyond aesthetic questions that might echo in the gallery, to questions about an objects use, the practices that situate it, or the behaviours that might emerge from the objects use and the publics that constitute because of the work.

The discussion in this chapter illustrates how some scholars argue for a richer vocabulary in critical design that moves beyond the critical/affirmative dichotomy.

(Pullin, 2007; Moline, 2006; Moline, 2008; Robach, 2005) Robach and Moline argue for an analysis of the field that does not rely on other disciplines.

The chapter has discussed how others have attempted to model the field of practice through narrative accounts and diagrammatic modelling. In these studies, the researchers include examples of practice from the academic context [research] and the operational context [industrial design practice]. This research is situated amongst such activity.

The work reviewed in this chapter illustrates that no other study *into* critical design practice has engaged with the designers taking the approaches. The review has identified an absence of any empirical study conducted into critical design practice that has engaged with designers recognised as leading the field of critical design practice. Such a study would present an original contribution to design research. Therefore this is where this study differs from others, in that it engages with a range of expert critical designers to collect multiple interpretations of what critical design is and what the designers do and extends this to collect information about the drive and the values embedded in the work. The challenge is therefore to design a research method to elicit values and assumptions of the designers through a discussion of their work.

Chapter five
Perspectives on critical design: interviews with expert 'critical designers'

5 Perspectives on critical design: interviews with expert 'critical designers'

This chapter describes the interviews comprising the major empirical part of this research. Seven interviews were carried out with expert designers. The designers drew their comments from their professional relationship with the field of critical design practice. The following discussion presents their perspectives on critical design. The different perspectives and design approaches discussed in this chapter show developments and variation in the practice beyond a colloquial understanding of critical design. The chapter presents how the designers' values and the topics they address differ. It also presents a range of contexts where critical design operates, how the practice is facilitated, where it disseminates, and how it functions in relation to other forms of creative practice. The discussion identifies some of the assumptions about the practice and the methods by which it operates, which warrant further investigation and analysis in order to develop the discourse. The chapter provides evidence for the coding processes used to analyse the transcripts and develop the taxonomy in the chapters that follow. The chapter begins by introducing the interview method. It is then structured by the order the interviews were carried out between January 2009 and January 2010. Each interview begins with a profile of the participant. This acknowledges their background, experience and relationship to the field. The interview context is then described. The participants' voice is presented verbatim. When design work is discussed, it is illustrated by an image. Key points are lifted and reflected on before the chapter concludes with a general discussion about how the material relates to the objectives of the research.

5.1 Interview design and procedure

To understand a design practice there is a need to engage with designers at the top of the field. Interviews were identified as the most suitable way of engaging with expert designers for reasons of access and availability. Seven interviews were conducted with expert 'critical designers'. In line with the interpretive method, an in-depth conversational approach to interviews was used (Rubin & Rubin, 2005). The objective of these interviews is to elicit a rich account of the designers' experience. The interviews were arranged to collect data on three elements of the study: Firstly, the participants' perception and understanding of critical design. Secondly, on values, the ideals drives and motivations of the designers. Finally, reflections on how the participants perceive the role of critical design practice in a broader design context.

An interview guide was developed and tested. Two pilot interviews were arranged and conducted to refine the guide. Material for recruiting participants included an invitation to participate email and informed consent that are signed. A six-question guide was used to organise themes for discussion. Each theme was addressed to minimise bias and ensure a standard format to the conversation. Participants were scheduled for a 40- 60 minute interview. A description of the research was read, which allowed the participant to ask any questions to clarify the nature of the study and expectations for participation.

A conversational approach enabled participants to reflect on the meaning of their experiences during the interviews. This approach engaged participants in a deeper exploration of their practice. An opening exercise was used to orient the inquiry and how the participants practice is related to critical design. The questions asked ranged from definition of terms, to places where work had been shown and disseminated. The purpose of this was to show an understanding of the participants work. This helped establish a rapport of trust and familiarity and a successful conversational partnership with the participant crucial for a successful conversational interview. (Rubin and Rubin (2005) Laverty (2003) Kvale (1996) and Polkinghorne (1983). The interviews were transcribed verbatim from audio recordings. The transcripts were then edited and supplemented with reflections and a copy of this transcript was returned to the participants.

5.2 Participant selection: identifying the community of practice

The aim of participant selection in hermeneutic research is to include participants who have experience relevant to the study. Expert designers were identified from the literature. The aim of studying expert designers is to gain knowledge of design activity at the highest levels at which it is practiced. These designers work and operate in ways that are at boundaries of normal practice. Studying boundary conditions provides an extension of understanding that is not available from studying normal designers. (Cross, 2007, p. 41)

The rational for choosing the designers was grounded in their prominence within the design literature that prevails on critical design. All participants had written on critical design and are heavily cited in the literature. However, in identifying the community of practice the institutional links to the RCA became overwhelmingly apparent. Before going on to discuss the interviews it is necessary at this point to reflect on the relationship between the community of practice engaged in critical design and the RCA.

The first point to note is that Anthony Dunne co-curated an exhibition on critical design for the Israel Museum in Jerusalem. His involvement was developing the selection criteria and choosing the 17 designers who exhibited. The aim of the exhibition was to gather together work by young designers that explore new critical roles for design. In doing this Dunne began to establish a community of practice within the culture of the RCA, which would popularise the design practice.

Over the past ten years, the RCA facilitated developing this movement in critical design. The institution is in the business of producing critical and socially conscious designers and artists through its pedagogic approach and research activity. One of the most distinctive themes of design research at the RCA has been work that mobilises social activism through design. This commitment is enshrined in the College's Royal Charter to explore 'social developments.'

Moreover, the past 10 years have seen the College awarded of the highest score for art and design in the most recent Research Assessment Exercise; commendation by the Quality Assurance Agency in 2007 for research leadership and management, including high quality research training; incremental success in winning major research grants from the UK research councils and other funders; new digital facilities supported by the Science Research Investment Fund; an increase in research student numbers, and in the

number of academic and technical staff engaging in doctoral study themselves and training to supervise research. Allied to this, there has been strategic development of key research fields in collaboration with researchers, funders and partners, and referenced in accordance with new thinking and new knowledge, based upon changing technological, material and social possibilities. This approach to design education is fostered in critical design sitting at the interface of a number of creative fields. The status of the college and the industrial, philanthropic and funding relationships it has, facilitates a culture of critical exploration through design.

Environments that foster this type of design practice in part dictated the participant selection. In the institutional context the RCA in particular has freedom, reputation, social activism and the criticality to allow designers to practice outside of the constraints imposed by commercial practice yet still allow the designers to earn a living and survive by practicing product design supported by the institution. The institutional link between the RCA and critical design is recognised internally by the institution. In 2009, the RCA advertised two PhD bursaries to fund projects advertised as developing taxonomies that explore the critical and conceptual work carried out by its alumni to assess the impact of the RCA and its culture on the landscape of critical practice in design. The proposed studies to be supervised by Gareth Williams recognise the impact of the RCA in this field. However, while such a commission of study might seem introverted and inwardly reflective, the position of the college in developing critical design is also recognised in recent research (See for example Koskinen et al. 2011 p.40). While this research does not specifically focus on the RCAs contribution it is difficult to find examples of practice and those who could be considered experts that are not linked in some way. This is reflected in the participants who were willing to participate in this research. the participants all have a relationship to the Royal College of Art in the capacity either of student, researcher or tutor. Each participant was selected on the basis that they are frequently cited as contributors to the filed of critical design. Each has exhibited work and written on the subject.

5.3 Dunne and Raby

Professor Anthony Dunne and Fiona Raby form the London based design studio Dunne and Raby. Their clients and partners have included Phillips Design, Sony, Panasonic, France Telecom, The Science Museum London and Welcome Collection. Dunne and Raby were Senior Research Fellows and founding members of the Computer Related Design Research Studio where they jointly ran the Critical Design Unit between 1995 and 2001. Dunne and Raby's work has been exhibited internationally and is in the permanent collections at MoMA and the Victoria & Albert Museum. They hold teaching positions at the RCA, where Raby has taught in Architecture and Interaction Design and today is a Reader on the Design Interactions Programme. Dunne taught Product and Interaction design and in 2005 established the Design Interactions course. Today he heads the department. They have published and spoken extensively in the area of critical design practice. They have curated exhibitions that show examples of critical design work including *Pop Noir, What If, Impact* and most recently *Between Reality and the Impossible* as part of the 2010 Saint Etienne International Design Biennale. Through their design, curation and pedagogical practice they are recognised as pioneers in pushing product design into new territories of exploration. The interview was conducted at the RCA in London January 2009.

The interview began by questioning how Dunne and Raby's understanding of critical design has changed since they worked at the Computer Related Design studio. In answering, Dunne referenced the larger historical context.

> **Anthony Dunne:** Over the years, two things have happened: One is that we've become historically aware of how critical design came about. There are all sorts of interesting practices that happened in the past that would use design as a form of critique but would never call it critical design. There are many other names for it, especially in Architecture and Fine Art, and even in design with practices like Superstudio and the Italian experimental design. Then also, more and more of our contemporaries and even younger designers are now exploring these other roles for design and not necessarily calling it critical design, but using design in this expanded way to raise issues, or to provoke debate, or to critique.

Acknowledging the Italian radical practices Dunne's insight relates to the arguments made earlier that critical design is part of a larger history of marginalised practice.

> **AD:** For us critical design now is a useful term to describe a practice that uses design as critique. But at the same time, we're very wary of it becoming a label or a kind of a short hand. I think the idea of design as a form of critique is really important and special. I'm worried that the label

> critical design is too narrow a form. Obviously, that particular phrase came from us and characterises the type of way that we work. It would be much more exciting to see other forms of design that critique. That maybe challenges what we do or offer something different.

Dunne described frustration with the misrepresentation of the term. Where forms of non-commercial, conceptual design are labelled 'critical design'.

> **AD:** It's just a bit frustrating when people start to specify neatly and say tick, tick, tick, it must be a critical design. The only reason we ever named it was that we had to as part of our job. For us and our practice we much prefer to read about how people are using design as a form of critique themselves, rather than when you come across someone saying well "I do critical design or I'm a critical designer," because often they're exactly not that. It's kind of a handy label to hide behind. That side of it can be a bit disappointing when you come across it and see what the work being done under that label is.

They described their suspicion of critical design as a denotation of critical design practice. They refrain from using it themselves.

> **AD:** What we do talk about is this idea of conceptual design and design that's all about ideas. It's freed from let's say practical constraints. In that space critique is one possibility, debate is another, entertainment is another, asking "what if" is another. Going back to the beginning of your question, that's probably what's changed for us now. We're looking at this bigger space and we're seeing critical design as one possibility alongside many others and they are all unified in that they are rejecting this very narrow definition of you must design products, they must be mass-produced, this narrow way of thinking about design.

The interview focus moved to discuss Dunne and Raby's design process and their use of design to problematise trajectories of progression in science and technology.

> **Fiona Raby:** We love technology and science. There's a kind of geeky fascination with the potential of science to do something. So, I think sometimes that's the starting point for us because within science and technology there is always a promise. As soon as some new science evolves – you know, "we're going to save the world" it goes off on these utopian visions – we think, "Well no! This is not going to come and save the world." We want to half believe in it but then half unpick it and say: "What does it really mean?" So, I think we do start a lot with technology.

A common theme in Dunne and Raby's practice over the past ten years has been a reaction to the way the design industry characterises the user. Dunne discussed this alongside the interest in science and technology.

> **AD:** But equally, we could start with ideas of what it is to be human – like with our garden project *Weeds Aliens and Other stories* or *Anxious Times*. It's kind of a reaction to the way industry

characterises the user as this very narrow bundle of desires and needs. At the time, we had this feeling that there must be some more interesting ways to define need, desire, and let's see if we can explore that in a project. So often, the projects start from an interest in something and then trying to Figure it out during the project. Usually we can't really talk about stuff as we're doing it because it's so messy and chaotic and by doing the project we start to form a very clear opinion about something, whether its genetics, the idea of the user, our relationships to electromagnetic fields. Afterwards it seems extremely neat and clear like we must have started with a kind of set of objectives, but that's why we do the projects.

Dunne and Raby projects are carried out as a form of material critical thinking – a way of thinking about concerns through design. Regardless of the context, whether it is issues relating to human psychology or a focus on science and technology, they start with an interest in a topic. They engage with professionals in the area to develop their understanding of the topic as designers. In the design process, they engage visualising the topic through objects and by build scenarios of use around it.

AD: So often, we start with things we're interested in but we don't quite understand. Then the project helps us clarify it. We always want to link the investigation to everyday life – even if it's long elastic connecting it. So, that's why it's often furniture, products or telecommunication things rather than something extremely abstract like a pure sculpture or an instillation.

Figure 5.1 *Meeting: Weeds Aliens and Other stories*. 2004. Indoor furniture to grow and look after; a place to meet and make up when lovers become neighbours.

For example, their *Robot Technological Dreams Series* was developed like a proposal. This shows how their work is developed to begin a process of discussion.

> **FR:** Normally, you might write an A4 sheet and you'd write, "We're going to look at robots and do…" Rather than writing a proposal, we made objects that were the brief in some ways. They're not solutions that say this is the end. This is almost like the brief, but it's a three dimensional visual brief. We were fascinated by robotics and it was a quick project for us. We questioned: "What do we think about robotics?" Those four things were us saying, I guess, "This is what we think." Rather than writing this list, they were made into things to kick-start a discussion.

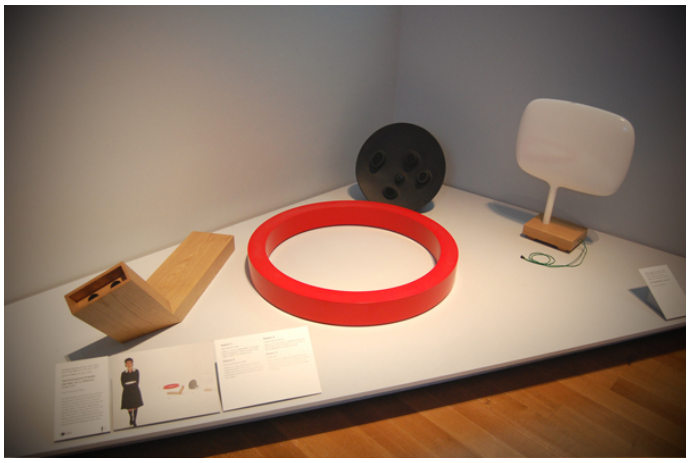


Figure 5.2. *Technological Dreams Series #1*, 2005.

Figure 5.3 *Still from All the Robots,* 2005.

Dunne and Raby projects are often self-initiated. In this sense, they are their own clients. Dunne described how developing an idea is similar to the process that filmmakers might go through. The challenge is to fund the project. Often the ideas might be there but the money often is not immediately accessible. This contributes to the projects taking time to complete.

AD: A lot of our process begins with reading and talking to people. Then we discuss a lot. Then at some point, we start to try and translate those into ideas for products or furniture and the spaces all around. That's actually quite fast and the designs happen fast and then take ages to implement because we're always looking for funds or opportunities. I'd say writers might work like that or people trying to develop an idea for a film. It's very much about a story, a set of interests, making it accessible to other people, rather than thinking about problems, needs, and stuff.

The interview moved to discuss the values that underpin their practice. They used strong language to depict their dissatisfaction of, and frustration with, consumer culture – more specifically the role of the designer in consumer culture. However, despite their dissatisfaction and how, in many ways the industrial designer is part of a system that drives consumption, they refuse to abandon their profession.

FR: I think that we we're born into the everyday reality of the consumer world. This is our reality. I find it quite interesting where a lot of people can separate that off. They'll do something imaginative but then it'll be cultural. Whereas somehow we see the consumer world as the real world, and that's where the creative space actually is. Some people might think that that is distasteful, cheap or meaningless, because products don't have any cultural meaning. We think that they are medium for exploration.

AD: …although I don't know where this dissatisfaction comes from.

FR: Well it's because there are so many promises. Both of us really dislike consumer culture. We find so much sadness and pathetic-ness.

AD: ...then you take the idea of Industrial Design. I studied Industrial Design and Fiona studied Architecture. You are absolutely programmed to try and make the world a better place. Mass production is the way of channelling good ideas, good culture, and problem solving into society. I guess I felt personally very early on you couldn't do that. In order for things to go to the market place, they have to be quite limited and have to conform. Even though there are examples of beautiful things, I kind of wanted to reject it. Maybe ideally speaking for myself, I could think: I'll do fine art; I can make my ideal world and forget about consumerism. But I really think somehow I've been programmed as a designer to find that wrong. I feel obliged to try and make this rejection constructive. So all the projects I get excited about are from a dissatisfaction of the world as it is, but somehow I want to connect back. If things ever floated off, if I really became disconnected, I think I'd be deeply unhappy. So there seems to be some sort of tension, where we're not happy with the way the world is, feeling you can't do much to change it, but still wanting to offer up ideas, thoughts and possibilities knowing that they are highly unlikely to ever be implemented and maybe that's why things still end up in the design space and fantasy.

FR: We want to believe in the rhetoric that you can change the world. We don't want to reject it at all and we're never going to let go of that. I do think it's our education and maybe also the modern movement, how we were educated to believe that design could change the world. It can mass-produce culture and everyone can have a high quality of living. We want to believe in it and we still want it to be there. But in reality, maybe this is where the cynicism comes in, and we don't actually believe that this can be the case. The more that we look, the more dissatisfied we feel and the more critical we are of it. I think it's getting worse. Definitely mass culture is becoming so oppressive.

AD: Well dissatisfied. It's hard at the same time to speak for anyone other than ourselves. It's kind of arrogant. So, that's also partly why we just want to do our projects and if they resonate with other people that is fantastic. We don't want them to be prescriptions of how people should live, and we don't really want to say design should be like the stuff we do. Maybe that's why we also avoid saying: "well this is how we would design radios" because we don't really know. We operate in this space and say were deeply unhappy with the way things are, we don't know what the solutions are, hopefully our things can make a more interesting discussion possible.

Dunne and Raby talk about setting up a parallel space for design, a sort of alternative reality that questions actual reality.

AD: We understand table's chairs computers phones cars, but we want to create a parallel space for tables, chairs, computers, phones and cars whatever, but they have different values. Where it is as though a different set of politics or economics or ideologies gave rise to the world, the parallel world. By comparing them, you can see there are other possibilities. If something is very ordinary like it's a table with a GPS system in it. Clearly, it's not technologically improbable; there is some other reason why it can't exist as a real product. There is something about the way we think, about what makes sense, what's a legitimate product, or what's a real need. This parallel world can create a friction with the official one, and with people who are open minded, get some questioning going about why aren't products more poetic, or at least why can't we have conceptual furniture with digital products?

Figure 5.4. *GPS Table from Placebo,* 2001.

The conversation moved to what makes a critical design project successful. Dunne and Raby started to describe the characteristics of a critical design object. He related a projects success to audience engagement. This is slightly contentious. If the aim of critical design is to provoke debate then any critique could be seen as success.

AD: For one general success is if it makes you think. If people dismiss the things or don't engage, that's disappointing. It's like they don't work. Their workingness is that they get people to question. They do it by having to be odd. Odd doesn't mean weird. If they are too weird then they're just not going to work. So their oddness is a really important element.

FR: And there's a seduction in there isn't there?

AD: There has to be a seductive layer. We always have to make things as well as we can. Even if they are diagrammatic, they are nicely proportioned so that there is a feeling you want to be attracted to it.

FR: Also, I think the narrative in which we position something is important. It's not just the object, we craft the narrative and the context as well, that's part of the process of the design.

AD: The parallel thing is important to. It suggests it's close to reality but removed. Where if it were a far away land that would be a problem for it. So somehow trying to suggest, you could imagine using it, but you probably won't and it's that "why won't I, what would stop me from using this?" that makes it work.

FR: I also think by pushing up the aesthetics it helps to create a distance between realities. It elevates it keeping that distance of non-reality that somehow engages you. There is also a play between how much the aesthetic is brought in. It's not homemade; it feels like it could be made in industry, but it's not made by industry. It's up to a high quality so you believe it's real, but it's not real enough that you think it's a solution. There is a balance between believing it's real and not quite believing it's real?

> **AD:** We actually go through lots of sketchbooks on each project, looking at loads of forms and possibilities for construction but often they end up so simple.

This is illustrated in the appendix of the *'Hertzian Tales' PhD dissertation*. When looking at the study as part of the literature review it was striking how design sketches in *'Hertzian Tales'* did not get realised in the project, but informed later projects for example their *Placebo Project* (2002). This illustrated a long-term reflective attitude towards the themes that Dunne and Raby investigate. I raised this question referring to the appendix. Dunne explained how this showed how their practice is not trend driven and the works are about a genuine interest in a topic.

> **AD:** One of the nice things about projects taking time is you still find them interesting a few years later. They're sort of sitting again outside of current fashionable interests. Sometimes we purposefully let time go to see if we still find the ideas interesting. Often we don't, and it's nice to say "phew" and let it go. We do work and find something from years ago, and at the time, we didn't think it was that important and now we see a connection and use it.

Humour is an important element in critical design practice. In a lecture given at Somerset House as part of the exhibition *Wishful Thinking in Art and Design* Dunne and Raby presented how critical design was afforded by a clever matching of aesthetics and irony. This point was questioned in the interview.

> **AD:** I think the problem is that irony can be jokey and too simplistic and one linerish. I think what we're interested in maybe more is satire. Irony can be too obvious. Strictly, it means saying the opposite of what you mean. So something, that looks very industrial but actually, you're criticising it. That's too simple. We like the idea that it's ambiguous and you're not sure if we're really anti or for, and therefore you have to make up your own mind and consider, "why would something be for this or why would they be against it?"

Raby suggested how purposeful ambiguity in the design work helps give satirical form.

> **FR:** I think it's funny, a lot of people find it problematic that we don't appear positive and negative. We mix the two together, and you're not quite sure whether it's being a positive thing or a negative thing having both of those things within it. I think we feel comfortable when it's like that because then, we're not saying, it should be like this or it should be like that, it's up to the person to make up their own minds. How dark they want something to be is up to their own imaginations.

Dunne and Raby's work is often disseminated in the gallery. Additionally Dunne and Raby describe their work as research. I was interested to know how they elicit

information from the projects. For example, what methods they use to document the discussions that arise from the work?

How their design operates as research is not as literal as data collection or empirical observation, they use the work to engage with experts as a discursive tool.

> **AD:** With the robots for example, different organisations approached us as a result of that project and dialogues came out of that. They were interesting and we were talking with people specialising in how you give form to artificial intelligence in the home. They certainly wanted to talk to us because the project sparked off something in them. They in turn, by telling us that, opened us to something. We hope that we connect with people but this idea of what do the people that come to the gallery think isn't so interesting because it's too focused on the kind of user centred, audience is god, sort of thing. We feel it's important that we put our work out there and anyone can come and see it, criticise it, whatever, and it's not just in our studio. To be really honest, it's the kind of professional conversations that then come out of it that are more interesting. Whereas in our early work like the *Placebo project* we did experiment with putting things into people's houses but it was more to get them to tell us stuff about electronics that we would never be able to imagine. Like how they really live with things and talk about TV antennas and stuff. Again rather than saying, what do you think about furniture, do you like stuff like this? Sometimes in a gallery that's what you get people just saying, "look at that weird thing" or "oh that's beautiful I'd love one of those."

> **FR:** With each thing that we design, there is usually somebody we want to talk to about it. We use it as a tool to help us talk. One of the reasons we wanted to do *Anxious Times* – making the hideaway pieces – was to talk to psychiatric nurses. We wanted to talk to a specialist about what your state of reality is from being mad to being sane. I think a lot of the things that we make, are things that we imagine as professionals we want to have a conversation about. The things we're designing at the moment are definitely like that. I think that is in all of our projects in many ways.

Figure 5.5 *Anxious Times Design for fragile personalities*, 2005. Hideaway furniture and Huggable Atomic Mushrooms.

AD: It's kind of a contradiction again, because we say that they're designs, and it's accessible and so on, but we are more interested in the expert conversations. Using design to make these questions come alive. If we were talk to an economist on their terms, it's going to kill us. If we bring along some design proposals of an alternative welfare state, then they come alive and the conversation comes off in a different way. We like to present all that back into a public context.

FR: It's the fact that social scientists can sit in a room and converse using their case studies. We want to come with something, some physical embodiment of an idea as a way of having a different kind of discussion with a specialist.

AD: We like the idea that a designer is an author. Not in the egomaniac sense, but in the sense that their thoughts have to be channelled into reality. In that, they represent the humanness of being human. So when working with engineers, technologists, material scientists, they are the advocate for the person, but often not for pragmatic needs, but to make sure it's deeply human. I find it really frustrating when it gets reduced to a dialog, the kind user-centred design can be, "What do you want? What would you like?" If you are designing something hyper-functional like an aircraft cockpit it has to be absolutely user-centred – it would be nutty not to – but you can move from that point through to whole areas of design where actually it's horrible to be user-centred. Where the world becomes a reflection of your own needs and design becomes richer because designers have attitudes and ideas that resonate with us. That side really only manifests itself in furniture, applied arts and designer maker stuff at the moment, which is a shame. It can't come through in the industrial process because of user-centred design.

Critical design comes from an attitude of people who are critical, who are critical of everything not just a certain area of life, that's their relationship with reality. What you do is you start to see limitations whether it's a political system or a piece of furniture. Then you start to imagine alternatives. Imagining of alternatives already means you're rejecting. It's not coming up with alternatives for novelties sake. For example, when you are a design student and we say come up with ten sketches, ten alternatives for this cup, that's sort of pointless. But there might be an alternative to drinking that really makes us think about everyday habits. That is valuable. I think when it is reduced to methods it's a shame.

The interview moved to question if Dunne and Raby had attempted to map the field. They had been working on their own conceptualisation of the field.

AD: Personally, I'd see what we're doing is fundamentally applied art but its post Duchamp. When art becomes about ideas you are still applying those ideas but to everyday life. But everyday life doesn't want that. There is a certain industrial, economic and a political set of mechanisms in place that allow a very limited form of design to be. That's what we have and that's what we have to live with. It pushes us into this parallel space. But there I'd say conceptual is the zone, the place where it happens. I would say conceptual almost equals fiction – it's a fictional space. Within the fictional space, you can have critique and critical things but you can have entertainment, provocation, commentary and so on. Can I draw something on this?

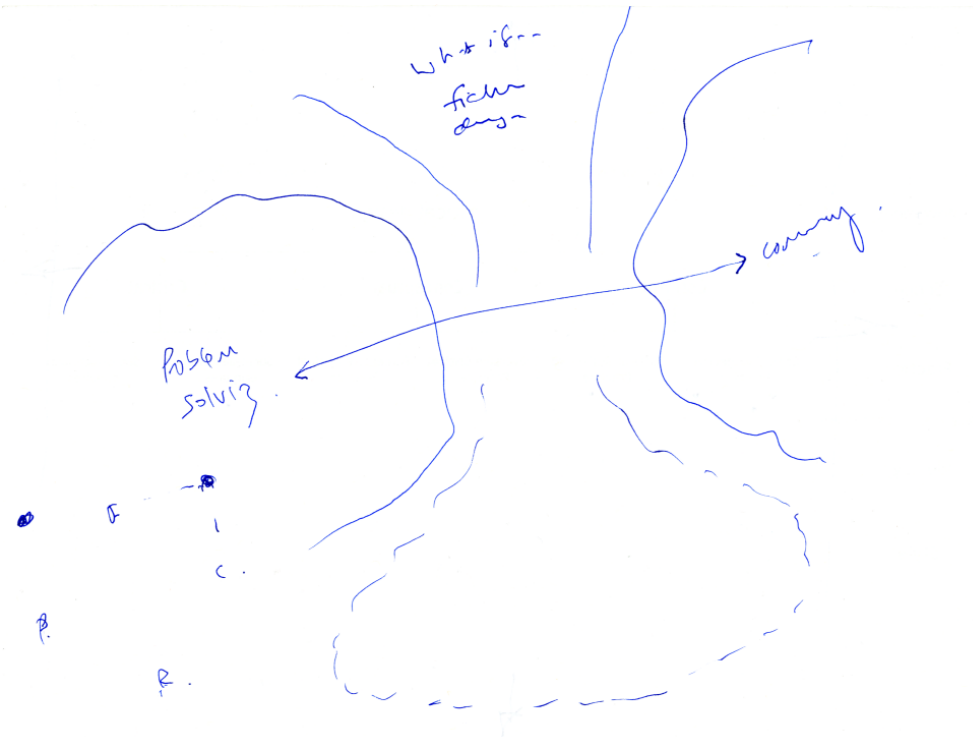


Figure 5.6. Dunne Sketch of the critical design space. A continuum ranging from Problem solving to commentary with a space for fictional narrative and questioning what if?

AD: We kind of think of problem solving and commentary. And I think there is a continuum where traditional design courses teach you to solve problems whether they are aesthetic or technical. More and more designers are reacting against that. But what the reaction is, is not very good, it's just commentary. It's like designing something to draw attention to the fact that the air is polluted in London. We all know that, what's the point. The problem with a lot of the commentary stuff is it's stating the obvious and that's really problematic.

FR: It's not going anywhere new is it? It's not offering anything else it just stops.

AD: It's parasitical. It's aesthetic. Its look and its feel depend only on the thing it is criticising. What we become interested in is the space in between. Where we like the language of this it's nice, its aesthetic, it's ironic, it's poetic, it's complex, but we do think it's important to make a more positive contribution. We think of this as a *what if* space or fiction, *designed fiction*. In this space, the fictions take on a purpose or a function they're there to get us to think, to offer alternatives. They are kind of more directed and I think a lot of the time our work gets misinterpreted as commentary. I think a lot of bad critical design is commentary. But it's quite hard to explain what the difference is.

Raby then added to the diagram. In one area, she described the work as iconic, and that iconic work tends to be representational. In another zone, the work is more experiential. In each area, the work is framed as design and Raby asserts that it is a real form of product design.

FR: There is a narrative it is a real design based on real problem solving, so it can work, but it doesn't work in the real space.

AD: And then down here you have the *fictional functions* the redesigns of mobile phones hundreds of chairs and stuff like that. It's quite interesting because with fiction and commentary, you end up with dystopias and satire and over here you end up with the fictional dimension of problem solving and that is probably hypothesis. You come up with a problem to solve and so on. There's something I think fiction, fiction and reality and sort of goal orientated stuff and more kind of playful things you can start to define axis. This is kind of simplistic at the moment but it's something that we are trying to Figure out. If there is problem solving, there is commentary, and there is fiction and actuality.

The interview provides evidence of how Dunne and Raby apply scepticism by offering commentary on the impact of design in society, challenging design thinking by reassessing contemporary roles for design. They deal with issues that the discipline and profession neglect, using product design to explore existential issues i.e. political economy, socio-technical and cultural concerns. They attempt to push the discipline forward asking questions about the capacity of product design in addressing such concerns. The act of designing is positioned as a form of critical thinking rather than a specific activity focused on problem solving. Although they can be described as challenging orthodox roles for product design, they make any rejection of a mainstream product design constructive. This is exemplified in the assertion that they are designers and that they do product design, they acknowledge their backgrounds and refuse to abandon their training in design. They provide insight into their values through the interview describing frustration and dissatisfaction while at the same time maintaining a deep appreciation of design methods. It would be easy for them to practice in a cultural space framing the work as art. However, this would not allow them to provoke the kind of 'real world' discussion they want to have through their objects. They expect their objects to be used – even if it is an imagined context. In this rhetorical use, the user is encouraged to turn for other places and begin to look at and imagine new potentials and question the governing mentalities in a material world. They describe how critical design affords this through mechanisms of satire and ambiguity they describe these characteristics in the interview as objects.

5.4 Noam Toran

Noam Toran is a designer and filmmaker based in London. He teaches at the RCA as a Senior Tutor on the Design Interactions Programme. He has a background in Fine Art and holds an MA in Design Products RCA. Toran's work has been exhibited and screened internationally. His work is in permanent collections at Museum of Modern Art New York and FRAC Ile-de-France, Paris. In 2009, he was nominated with Onka Kular for the London Design Museum's Brit designer of the year award for the project the MacGuffin Library. The interview was conducted at the RCA in January 2009.

The interview began with a question about *Desire Management* a project celebrating the use of products as platforms for dissident behaviour. The objects in *Desire Management* are designed based on testimonials and news reports and they attempt to reveal the inherent need for expression and identity formation in the face of conformity. In the project, Toran defines the domestic space as the last private frontier, a place where bespoke appliances provide unorthodox experiences. An airline hostess with a unique relationship to turbulence uses a motorised vibrating hostess trolley to serve drinks in her empty living room. An elderly man retrofits a vacuum cleaner to move systematically down his naked body, while a couple who engage in baseball driven fantasies unpack a bespoke chest that unfolds into a bed sharing characteristics with a baseball diamond to facilitate their desires. The project was shown at the Venice Architecture biennale in 2004. Inquiring into the rationale for the work and its dissemination, Toran was asked about his choice to show the design work at an architectural biennale.

> **Noam Toran:** I think at that point in my career I took what I got and I had the opportunity to show in a gallery during that period. So it just became the deadline necessary for what was already on its way. A project I was looking to get funding for, getting funding for and imagining already that there was a film attached to it but I had to first build these objects and then find additional funding to get the film afterwards. So the first manifestation of the project was the show that had three of the objects. Later there would be five in the film. I had to get another round of funding and a whole other obviously system in place to produce a film.

Describing critical design, Toran defined the practice by referring to Dunne and Raby's writing.

> **NT:** We know it comes from Tony and Fiona, from Dunne and Raby and because of the two books that Tony wrote. Those books have become, probably, pretty essential reading within

academic, within the academic world. It's one point of a spectrum that allows teachers, often professors, to talk about where design begins and ends.

From his perspective critical design started in an academic context but has since established itself in gallery and exhibition system. It is within the exhibition system that his work operates.

NT: …obviously as a term people will choose to hold on to it, to either define themselves within it, against it, it's very easy to become interested in terms. But I think through what is essentially a grass roots movement, which is the academic world this term has now become something that exists within the gallery system, exhibitions Tony and Fiona were part of a show that was called critical design. And so as a result it's become something that within this industry within the culture of design, in both as education as practice it's something that is now recognised.

Toran described product design's ability to function in the same way that art and film.

NT: …What it means, I think is that design has the capability to talk about things that are usually dealt with in other mediums. So we come to recognise there's art, there is film there's media. So this world of emotions of psychology, of existential issues, of political issues design for the most part hasn't always dealt or hasn't been acknowledged as having dealt with I would say it hasn't always dealt with it. It hasn't been acknowledged as having dealt with. Because when it does deal with those things it becomes art. Just because it's conceptual--. Just because it doesn't sit in a world of manufacturing of domestic space; where people can buy and sell it, it doesn't have to be art. Even if it's in a gallery space it doesn't have to be art, it can still be design and they are very adamant about that. Just like architecture has paper architecture, you know its conceptual architecture, it never gets built but it's still architecture. I mean architects embrace that. Design as far as I know has trouble with these things often. So I think that as simple as it is and obviously it takes off as to how people choose to interpret it whether it becomes controversial or not. I personally don't find it of any interest at all.

Toran has little interest defining his practice as product design because how work is interpreted and discussed is dependent on the audience using the work.

NT: I think that where as someone like Tony and Fiona are genuinely dedicated to the idea that what they do is design and that it should be judged and allowed to be called design despite its heavily conceptual nature. I have no such interest; I'm totally ambivalent to that. I think that my work obviously has been heavily influenced Tony was my teacher, then we were teaching together and we're back now in this. There is a very strong link there. Within a community that looks at the work through the eyes of design my work totally fits into critical design because it's simply not normal design. There is no output that is traditional in that regard. But most-- A great degree of the audience that I have is also through the film world, the work gets shown in

film festivals, it gets shown in galleries as art, and so I have very little interest in defining myself in accordance to these things. In film I'm also called something and my work fits into some category. In art it also fits into some category, it's like modernist sheik or something it's totally fucked up its like makes no difference? So I think that's important in relation to what Tony and Fiona do. They're activists in this debate they want this type of work to flourish they want it to be known as design they want design to expand the spectrum of what it calls its own and can talk about intelligently and I'm more than happy not to deal with it. They fight the good fight and I just reap the rewards.

The interview moved to discuss the projects *Desire Management* and the *MacGuffin Library*. Toran described how the characteristic of *Desire Management* fits into what is defined as critical design.

NT: It fits I think, into what would be defined as critical design, that is, if you were to approach it as such. This is a huge deal for me because, obviously people will see it, the final output is a film and people and people in the design world might look at it though this lens of design and recognise the value of the object, let's say quintessentially. But then filmmakers and audiences who are there at a film festival often don't comment on it at all, they see it as a vehicle for the story and it's the quality of the film that they either like or dislike.

Desire Management stems from Toran's interest and observation of fetish and human behaviour. The project is inspired by stories about fetish behaviours and the objects that are produced to facilitate these practices.

NT: …worlds of obsessions that is not necessarily related to sex at all, but simply are these sorts of quirks, these anomalies in human behaviour where you recognise you have this axe in you that is falling outside of what convention society provides you with and you have to make it yourself right? And there is this whole world out there that lets you actually access it and it lets these people access each other like: are you into getting dressed up as a big freight animal? I really have admiration for these people who devote all this time and energy to their own little obsessions. They build things it's a creative constructive function. Where they not only build things for themselves but they often try to outdo each other in terms of extravagance ambition etc.…

NT: …there was essentially that object, which allowed the people or singular persons to engage in some kind of ritual that was completely their own, that was related to their own, to some element within their psychology that needed to get out every now and then.

The project moves beyond orthodox and essentialist conceptions of need use and function instead Toran focuses on complicated deep psychological needs.

NT: … the objects were designed to achieve a very specific function. But the function is pretty, either kinky or unorthodox often comedic at least to look at and, in front of that I was able to find funding to produce a low budget film, where I could then tell the stories in a very artificial way it was very contrived. Everything's very artificial, choreography, people, objects, there is no dialogue.

Figure 5.7. *Desire Management Stills*. 2005

The *MacGuffin Library* was commissioned for the exhibition *Wishful thinking in art and design*. At the time of the interview, this was Toran's most recent project. The MacGuffin stems from Toran's interest in film. Through the design and production of rapid prototyped models and a film synopsis, Toran and Kular with whom he frequently collaborates, set out to investigate this cultural trait.

NT: I'm very interested in how as a population we read film and how embedded, how fluent we are in understanding the technical elements of film. We often don't focus on it unless we have to because films are so entertaining, so distracting in their abilities to tell stories but really interested in how these consistent elements within all films start to defy genre.

He suggests that this ability is not just story related but extends into production. How things are shot, the lighting, the characters themselves, that start to repeat themselves and thus establish archetype. Toran describes how audiences are fluent in understanding these factors. How a person can look at two seconds of a film and tell if it is film noir or a romantic comedy. He translates this understanding of symbols to design, questioning how the user looks and makes assumptions about the object: where it was made, how it was produced, how it works, the salary and lifestyle of the user. In our assumptions, we build a narrative that starts with the object. These processes are exaggerated in the *MacGuffin Library*.

NT: I chose the MacGuffin as a starting point which is this very consistent plot device that is a thing usually that everybody in the film is after all the characters are after so it's what allows people to move through space and time. It gives the actors their motivation I must have this right? And for the audience it doesn't matter at all we don't care it could be anything it just has to be of importance to the characters and we become convinced that they know what they're talking about because it's so important we're convinced of its importance. And so I used this trope this kind of consistent thing right, so the Maltese falcon the suitcase from pulp fiction. All the suitcases; suitcases are very common.

And the objects are functional for what they are which is to drive a story so the--. The final piece is a synopsis of one hundred maybe one hundred and fifty words and an object. Ideally, the audience creates the film so it because of their fluency in how films are made what Onkar and I hoped for is that they would see an object and read a synopsis and they would visualise the film. Even to the point of who would direct it maybe, there was a certain tone, or who would be acting in it so, some of the stories consume people. The goal is that they are producing the films themselves so we don't have to.

Figure 5.8. Koons Balloon Mould. The MacGuffin Library 2009. The MacGuffin is a cinematic plot device, that serves to set and keep the story in motion despite lacking intrinsic importance.

The interview moved to question how Toran framed his work.

NT: I think it's very common now to have people that are like these polygamists they sleep with everything they're designer slash this, slash that and I think that the work that I do is really--how it gets defined or understood is really dependant on the context and I'm not I don't care where it gets shown actually because ultimately it gets interpreted no matter what. There is just so much control you have. But as a result I don't have a consistent base of understanding where people say he's this or we know what he does. And that can go against you in terms of people want these definitions they want to know you're a critical designer for the most part these definitions are there to focus people and to see your work in relation to other work right? And so, Tony and Fiona's work and my work is in a certain way of seeing is very similar. We get exhibited together often as that kind of critical designed element and in other ways of seeing, it's totally different there is no connection.

Questioned about the 'noir' characteristics of his work he described the use of humour to engage the user.

NT: It all goes back to Roald Darhl. Roald Dahl is everything. I'm partially joking. But yeah it is dark, or it's interpreted often as being very dark. But hopefully there is a lot of humour in the work as well, that is what it's like: dark humour, black humour, it's unsettling. If I've done something right it's partially unsettling and partially humorous and there is a lot of precedents to that type of to those types of films actually where it's important to keep off balance and not give everything to the audience on a plate. Things tend to end very abruptly in the films and it's nicer that things are interpreted. So you're not being didactic or you not showing off so much like, look at this look at how amazing it is, you know look, look, look. We don't want that and yeah I've gotten a lot of criticism that it's depressing or mean or misogynistic everybody has something to say which is good. At least they have something to say.

He is willing to have his work viewed in multiple contexts. It consistently appropriates the discourse of design as a means with which to investigate and envision anomalies in contemporary and human behaviour. His work informs the creation of objects and films that reflect upon and comment on the intersection between design, mass culture, technology, cinema and psychology.

He describes the difficulty in seeing this work as design because product design is not acknowledged as dealing with such concerns. However, critical design as an abstraction of orthodox product design facilitates his activity and as a result, he is often described as critical designer. However, this is a label that Toran is somewhat wary of simply positioning as a mean to show work to people who engage with critical design.

In discussing *Desire Management* Toran expresses that there are complicated demands, needs and desires that can be designed for, however are not considered by product designers, as they are considered taboo. Foregrounding objects in short films, the objects are imagined as constructions for particular individuals and psyches, vehicles for an elaboration of the desires, fantasies and pathologies unique to specific modern subjects. The social foci of Toran's work therefore take as its subject human conditions, psychology, existential values and the practice is described as a form of socio-aesthetic enquiry.

His work closely references thinking from material culture although he is not explicit in his reference. He explores the diversity in material culture and argues that behind closed doors, diversifying factors in social theory dissolve and other socio-cultural foci become points of concerns.

Toran's critique is not new and has been dealt with in the material culture and social anthropology however, what is useful is how he exaggerates and communicates it through form, or as described throughout the popular language of product design and film. The objects facilitate 'dissident' practices drawing attention to specific behaviours in use and cultural foci that are for designers often seen as off limits.

The most instrumental element of his practice is the emphasis on storytelling and narrative. Toran offers the extreme account of how the narrative is constructed around the object in this form of practice. The emphasis on fiction, dark humour and external narrative emerging through Toran's description of practice suggest that these concepts warrant further analysis.

Toran's account differs from the others in how he does not frame the work as research in the interview. Moreover, he goes as far as to say he is not particularly concerned in defining the practice or defining himself as a critical designer. He is however, active in the field he acknowledges how his practice and the work produced has been used to define the field, he remains suspicious of categorisation.

5.5 Ralph Ball and Maxine Naylor

In 1985, Ball and Naylor formed a design partnership and began to challenge the boarders between art, craft and design. They have exhibited work internationally and held teaching positions in colleges in the UK and USA. Over the course of a decade from 1985 Ball taught on Furniture, Jewellery and Industrial design at the RCA. Ball has worked as furniture and lighting designer with both critical and commercial success winning Concord Illumination, British design and Industries and IDSA design awards in Britain and the USA. His work is in permanent gallery collections in the UK and USA. He is currently Professor of Design at Central Saint Martins London. Maxine Naylor is an award-winning furniture designer. She has twenty-five years experience in art and design higher education in roles that include course director for Furniture Design in the at the RCA and Associate Head of Design at Goldsmiths London. At the time of this study Naylor was Professor of Design in the Faculty of Arts & Architecture at the University of Brighton. The interview was conducted in August 2009 at Central Saint Martins College of Art and Design University of the Arts London.

Through practice and academic tenure, Ball and Naylor have developed a distinctive approach to practice based research and refined their critical perspectives. They have described their research activity as critical design. The interview began by asking for a definition what of critical design is.

> **Ralph Ball:** I think the first thing it means is that the objects we produce is about making commentary or comment on design practice. That means the objects themselves don't necessarily need to be functional, practical objects, but they need to refer to functional, practical objects or to the culture of design in order to make relevant comment. We use objects instead of using text. Those will be visual observations about particular issues associated with design. The issue might be to do with sustainability, excessive obsolescence, it might be to do with obsessive focus on a particular ideology and where that might lead. In some cases, we've explored the axioms associated with modernism and demonstrated how the axioms if taken to an extreme produce absurdities. The ideology finishes up being problematic. It's a way of exposing the fallacy of unreflective ideologies of any kind.

Ball and Naylor write about an 'open process.' They were asked to elaborate on this and how it relates to their practice.

> **Maxine Naylor:** We both trained as furniture designers. As a furniture designer, you are often working on your own projects – certainly in your educational experience and often as a professional. In a more 'open process' what you're doing is you're working with other designers. It's a much more communal activity and it's where ideas are debated and discussed – they're moved through a conversation. In many ways critical design is a dialogue. It's a visual dialogue about our ideas concerning design thinking. The 'open process' is that process when you are having a discussion and debate while you are working. It's also substantially to do with the idea that you are not working for a client. You are working to a design agenda rather than a client or service agenda.

Ball outlined the self-initiated character of critical design and how an 'open process' is different to the type of constraints that a client brief imposes.

> **RB:** If you are working as a professional, you are invariably doing something relatively preconditioned whether it's a specific design brief or a particular set of required parameters to operate within. In an 'open process' those things are much less constrained and you can allow all sorts of other elements in. We talk about allowing accidents to happen, finding things by accident and the fact that when you are working with the juxtaposition of objects in space something might happen simply by the fact that two things come together. You can be aware of that and use it to lead off. In a conventional design brief you would often have to ignore that newly opened route.
>
> When we talk about 'open process' it doesn't mean there aren't any rules. The rules are determined by the choice of the object or the choice of story that we're trying to tell. When we conceived the 'Archaeology of the Invisible' – the overarching project is called 'Sustaining Desire' – what was interesting is that we were working deliberately and specifically with objects that had already been designed and we were redesigning them.
>
> What that strategy does is that it objectifies the process in a different way because you are starting with a given. For example, that is a generic stacking chair and asking the question, what are we going to do with that? We can both buy into that discussion objectively. It's not about whether I think that this proportion is better than that or I'd detail something in a different way to Maxine. It's about what makes sense in terms of telling the right story about this specific object. The objects impose certain kinds of rules because they are what they are.

Figure 5.9. *Blackstack Archaeology of the Invisible collection,* 2003-04.

RB: A stacking chair is a stacking chair and not any other kind of chair. It has a certain set of rules about what it does and doesn't do and we have to honour those rules.

MN: There are particular parameters implied by the objects themselves. We try and define and operate with those principles. We almost agree a set of principles before we start working so that we know we can't do that but we can do this. The old design principle of creativity within specific constraints. By limiting the language we actually exploit it better. We get more out of it because we focus on the elements which are appropriate. This type of designing is a much more open-ended activity. When we started the first collection Archaeology of the Invisible it wasn't determined that there would be a collection of chairs. There was a discussion about chairs. The objects are a manifestation of the conversation we were having.

Ball and Naylor describe 'design poetics' and the use of rhetoric in their approach. Ball and Naylor drew analogies between product design and forms of literary mechanisms and like Dunne and Raby suggest the designer operates in a similar way to an author.

RB: 'Design poetics' is coined and used in the same way as literary poetics and poetry. Something doesn't have to make literal sense it has to make poetic sense. What does that mean? It means that in literary poetry you can put words together that wouldn't necessarily make figurative sense but elicit a different kind of meaning. For example, if I talk about someone having a loud voice that would be a normal literary statement but if I talk about a pale green voice or a dark blue voice that would be a more poetic description – one which engages the faculties of both imagination and interpretation. We can consider 'visual poetics' in the same way. We put together something which creates a contradiction, creates a paradox, or creates some form of visual resonance, which is different to conventional expectation but which throws light on the object that we are dealing with.

MN: Often the work is about engaging people in looking at objects afresh and it doesn't have to be serious and ponderous. It's actually often quite witty and amusing. One of the things we had happen quite a lot when we first showed *Archaeology of the Invisible* was people asked me if it was

all right if they laughed at the pieces. I said yes, they're funny; they're funny aren't they? It's about people getting it rather like comedy. Being poetic about something allows people to look at things in a very different way.

Ball and Naylor emphasise the importance of humour in the design work. They refer to juxtaposition and narrative, which are compositions of satire. I questioned if humour is an important element in their work.

MN: Culturally it is and so it should be in our design work.

RB: Another point about the poetic aspect is that we are making objects that look both familiar and strange. In literature, there is a recognisable relationship between ordinary prose and poetic language. Poetic language uses the same words as ordinary prose it just puts words in different orders. When we are working with chairs, we are making objects that are familiar but we are remaking them to be simultaneously unfamiliar.

MN: We also look at features, characteristics and differences. Because we're both furniture designers we look at chairs very closely. Chairs have got real personalities and attributes. These characteristics are invisible to most people. By altering them they become generally more readable. We shift and emphasise. We make their personalities stronger and people see them more fundamentally.

Figure 5.10 Plastic *Gold (anonymous and ubiquitous white plastic stacking garden chair) Archaeology of the Invisible collection*, 2003-04. Laying Gold leaf on the chair changes its form and function from a robust common chair to a fragile unique piece.

RB: The whole point about the *Archaeology of the Invisible* collection is that it's actually 'digging up' awareness, making visible that which, because of it being so common and so ubiquitous, is

invisible, culturally buried. The value of stacking, or the economic or structural difference between one chair frame and another goes unappreciated.

MN: Whether an object is 'designed' or not designed, or if it is well conceived or not well conceived is often simply not considered at all.

Other critical designers talk of rhetorical use. They design objects that alone give little idea to what the object is or is for. Such examples need an external narrative to establish contexts of use. With this external narrative, the user can imagine using the object. Ball and Naylor's objects are somewhat different. They aim to establish an intrinsic narrative. The work is laconic and the commentary is in the material properties and arrangement of the object rather than in a text, image or film surrounding it.

RB: We are interested in what we call 'embedded visual narrative'. The idea is that we're trying to use a visual narrative. What we are looking for is to have the object speak for itself or declare its intentions directly. The story ideally is embedded in the object rather than existing as a separate narrative. You don't have to have a piece of text to go with it. That's the difference between what other critical designers may do and what we do. We intend that you are able to directly, visually read what the object is about.

They describe mainstream practice as "design orthodoxy" they were questioned about critical design's relationship to a mainstream practice and if they could ever see critical design feeding into a more traditional idea of product design.

RB: I think it can occasionally become conventionally functional as an accidental by-product of the process. In the past some of the things we made prior to *Archaeology of the Invisible* which were developed within a critical or an ideological frame of reference and driven by that particular definition. But we were designing these objects within a product design ethos that meant that we were conceiving and detailing them as if they could be produced. That suggests that if, by accident, they happen to have a commercial viability then it's possible that they could easily migrate over the object boundary and become products. This happened with *Golden Delicious* and *One Day I'll Design the Perfect Paper Light Shade* they became products but only because they're conceived using the language of industrial design – they therefore already have the latent possibility of being product design. They were originally conceived and presented as one off pieces but within industrial production ideology.

Figure 5.11 *One day I'll design the perfect paper light shade,* 2000.

MN: By nature, because we're designers we try and rationalise as a designer would. We put things together in a rational way using the principles we've grown up with – economy of means and so on and we use materials effectively and appropriately. So in a sense that's what it's also about. It's expressing those traditions. They are now traditions of thinking about how things are manufactured. Even if it is something we've altered, it's still reflected in the language of the piece and in the way it was manufactured.

The interview moved to discuss motivations and values that drive Ball and Naylor's practice. They were asked to discuss notable influences, inspirations, education or any theoretical perspectives that influence their perspectives and augment their practice.

RB: One of the things that initially motivated me was a kind of frustration with what I would call an endless cycle of the same neo-modernist work. Also, a frustration with the way that postmodernism and various forms of contemporary design simply seem to be fairly stylistic activities with very little intellectual content. Certainly, postmodernism was used to attack modernism as being something, which has nowhere else to go and was caught in a stylistic cul-de-sac. Postmodernism as a replacement can be accused of equally facile activity and limited works. There are exceptions of course; there are exceptions in both camps to that limitation. So yes, what we're interested in are the exceptions rather than the rules. In that category we would put people and influences like SITE, the architectural practice, Marcel Duchamp's Rue Larrey Door. There are certain types of objects and certain things that make sense to us in terms of what we are doing now that are historically part of that same lineage. I think initially it's to do with frustration with the design work that was and still is coming out and seems to be more and more of the same. I don't see any value in actually doing something, which is no better than something that Charles Eames did in 1950.

MN: The work extends in terms of education. In many ways the thinking came from – well certainly from me – a frustration with students being unable to look properly at objects. They

don't look at things analytically or critically. People don't look at things more than superficially. Students particularly have to cultivate a sustained concentration and the project turned into one where actually I got my students to appreciate objects better. They looked at things for longer. They understood the implications of manufacturing an object. They started understanding that it was built, it was constructed and that many people worked on it. They gained a greater appreciation of artefacts, and this goes back to engaging the sustainable debate.

RB: There is another difference in how we work. Because we are furniture designers, we are interested in what we call 'mature typologies'; types of object that generally have an agreed consensus on basic form. I'm not particularly interested in electronic objects, which don't seem to have reached any kind of formal maturity. The other definition we have therefore is that there are 'immature objects' and they haven't reached a final form because, for example with the telephone the function is to communicate with somebody over a distance. That form and method keeps changing doesn't it? With the chair, the basic form was established thousands of years ago. We have many variations on the same fundamental form… something that holds your body at a certain height off the ground, to make it comfortable for your legs. With regard to talking to people over a distance that's changed from smoke signals to mobile phones and could continue to morph into something that's almost intangible.

MN: The thing about furniture is it's about ritual, it's about culture, and it's not just about comfort. The electronic world is driven by micro technology, which is fascinating but it's an expansive, shifting and a kind of amorphous entity that in a sense could be almost invisible. In contrast, furniture is always going to have a physical presence.

This is the one of the most differentiating factors between Ball and Naylor's approach and speculative forms of critical design practice. They share more in common with Italian radical design and Dutch conceptual furniture design than with what is 'typically' seen as critical design. Ball and Naylor explained this characterisation.

RB: That goes back to the 'embedded' narrative. We are working with recognisable archetypes. I think the problem with electronic products is that they are less recognisable. That is why some designs need an external narrative to explain what they are. You could have a cube or a minimal shape and you can say this is a something – a radio for example – you declare that's what it is.

MN: Driven by hidden electronics it could be anything. Is this cube a calculator or a smoke alarm?

RB: Then you have the idea of imagining using. As soon as I pick this up and put it to the side of my face it becomes a mobile phone. As soon as I pick this up and behave with it in a certain way, it becomes the object associated with that particular behaviour. But it requires a 'theatre of use' to have that happen. With mature objects we already recognise them so therefore we've got a recognisable narrative to start from.

The discussion then focused on framing, and what makes the objects that they produce, design objects and not conceptual art..

MN: We have this debate quite a bit. Sometimes out of perverseness, sometimes we want to – if we're labelled as designers – say no we're artists and sometimes when I'm called an artist I say no I'm a designer. Actually, in the end I don't know if it's an interesting debate in itself. As soon as you set yourself in that position people look at the work in a particular way. I know they need to set it in a particular context but my thinking is that they look at it how they want to look at it. If they want to see it as conceptual art fine, but if they want to see it as an interesting statement about design that's also fine. I would probably always say fundamentally I'm a designer because I like the problems that designers tackle. I think they have serious implications for the world. If you're going to get deeply philosophical, I think designers have an ability to make a huge impact on our environment. Not just in terms of sustainability but to the quality of the environment. We suffer for a lack of quality and integrity and at the moment society still doesn't know what design is. They think it's a styling exercise, they think its packaging, they think its branding, but the core activity fundamentally is coming up with good products.

Figure 5.12. *Chair Archive,* 2008. Indeterminate Cases exhibition. La Sala Vincon Barcelona

RB: It follows from that. You might choose to use art as a strategic label because people sometimes take art more seriously intellectually. There is a perception, a position – when you locate something in a gallery it is looked at differently than if placed in a retail store. You can use this perception of the gallery context. It's strategic to use the idea that it is somehow art about design or better, art using design as a point of reference in order to make statements about design.

MN: I think your point earlier, which I would agree with, it's that we honour the process of designing. We don't mean to throw it out of the window and start from first principles. We have a good legacy to work with. What designers haven't done is move design on to where it needs to be. We've corrupted it by doing these copies of things. In general, we have a very different idea of what design can be than many designers. I think it is a very, very significant profession that's been much abused and much misunderstood and actually what I find upsetting is I think many

other professions understand what we're getting at more than the profession itself, what the value of it is.

Other critical designers focus on issues that could be considered outside the design discipline – described in chapter four as without – using design to address societal and ethical concerns such as bio-ethics and scientific futures. Ball and Naylor's work seems to subvert design, challenging the discipline by offering critique of a design core – outlined as within. I drew on this conceptualisation to question what they thought of this and making the statement that their work typically works through subversion or orthodox design.

MN: It is subversive in a sense of challenging current design thinking and practice, that is, much of design often defaulting to branding exercises. Yes, our design actively opposes that. But not subversive. Fundamentally, I believe design can be a powerful tool that doesn't need to be completely dismantled; it just needs to be paired back to what it's capable of doing.

RB: I would agree generally with that. However, additionally we are looking at sustainability, in a way I think is different to other people. Sustainability does belong to that larger territory. The umbrella title of the original project was called Sustaining Desire and the idea involved looking inwards to project outwards again to a larger social context. It's basically proposes that we need to start valuing the good things that we already have rather than making more and more, throwing them away and making more and more again. So Sustaining Desire becomes: let's focus on both the intellectual and the aesthetic marriage of things which are really good pieces of design. So we have to go inward i.e. to be introspective in terms of looking at what these objects really are and what they do by representing the forgotten and the familiar.

MN: But then also it's interesting because it depends on the audience. I would say that our audience is primarily a design audience. I see other designers as my audience. I'm trying to inform and motivate that inner core to do something. Yes, they are being asked to look outwards but what we are doing is trying to influence design education and in how we deal with, how we think about design as a profession. We've got very complacent.

RB: Well it's not very ideological anymore is it? It's very commercially orientated.

MN: It's driven by very specific criteria that are very limited and ultimately terribly disappointing and design isn't only about that.

RB: I think that's strange and it's perhaps why we keep getting attached to art.

MN: Through their work artists are allowed to comment and critique and we're not. We're told you're not really a designer unless you're providing a 'service'. I am providing a service it's just not got a client in a traditional sense. The client is the educational system, its design thinking.

It is difficult to put in place the critical rhetoric it takes to visualise a need for a revision of the status quo in product design practice through design. Ball and Naylor attempt this by reflexively turning design methods on design itself. They satirically exaggerate the effects of instrumental approaches to design and superficial replication. They use design as a tool to communicate ideas about design culture and society, they act as critics of design from within design practice. They state how design does not need to be completely dismantled but should be questioned. Their design work attempts to re-establish visual contemplation and communication: to put the brakes on unreflective proliferation and superficial replication. They provide critical, reflective and ironic commentary on cultures of consumption of both material and information. Ball and Naylor aim to find forms of expression where structure and material resolution are taken as given and the designed object as cultural information can be contemplated. The work focuses on reconnecting and building narrative layers of meaning back into objects that have lost meaningful significance, rationale and value under the proliferation of inferior copies. Their practice differs from those in critical design that deal with scientific engagement or technological futures.

They are loyal to a core set of industrial design skills, proportion, production, manufacture, quality and function. These are subverted reinforcing the need for an attention to these principles. They show how even if a project is framed as critical it can be grounded in established traditions and how that same approach can be extrapolated to incite reflection on the tradition in which it operates. In this way, the practice is akin to Italian radical design rather than the techno-centric practices synonymous with critical design.

Ball and Naylor recognise their audience as a design audience. They engage with how the object is shown and read in the gallery context exploiting any association with art. Design commentary informed by art sometimes treats design's preoccupations as over-determined and misguided. They negotiate this by suggesting that it does not matter if the object is read as art or design. Associations with art facilitate the concept behind the object and the commentary through it. They imply that a contemporary culture of design is not equipped to discuss the work and so they lean on the intellectual maturity of art.

5.6 James Auger

James Auger is a Designer, Research Fellow and Senior Tutor in the Design Interactions department at the RCA. He has an Engineering apprenticeship from Rolls Royce and an MA in Design Products from the RCA. He has worked as a Research Fellow for Philips and as a Research Associate at Media Lab. Auger is a partner in the speculative design practice Auger-Loizeau whose projects have been exhibited internationally, including the Museum of Modern Art New York, 21 21, Tokyo, The Science Museum London and the Arts Electronica festival Linz. He has exhibited, and spoken about his practice internationally. At the time of the interview, Auger was completing a practice led PhD in the field of speculative design. The interview was conducted at the RCA in November 2009.

The interview began by focusing on Augers understanding of critical design and the range of terminology used to define critical practice.

> **James Auger:** It's a little bit too early to bring a finite description and meaning to these things. Some people are talking about discursive design, some people are talking about speculative design, obviously we've got critical design, and we've got conceptual design, and I think there is a couple more as well. If you look at how people are putting forth these terms, claiming these terms, and at the paragraph they use to describe them, there is a lot of crossover. The one thing that they all have in common is the output of the discipline isn't for commercial purposes – that's the key thing. So the function of the products is to question or to challenge expectations of artefacts or expectations of technology.

Auger expressed that an ambiguity in terms is not just limited to critical design practice but to other forms of design practice, especially how designers are seen outside of the design discipline.

> **JA:** Design as a discipline is hugely misunderstood. We do a lot of collaborative work. We go to other universities. I'm collaborating with the science department at Aberystwyth University at the moment. When you go there, and you are introduced to someone, and say you're a designer, if they've never worked with a designer before suddenly an image pops into their head. They've got preconceived ideas about what design is. At the moment with our obsession with reality TV and home makeover programmes, a person who doesn't know designers, idea of a designer, is probably Lawrence Llewellyn Bowen or Linda Barker. They imagine you're going to go into their pristine expensively laid out laboratory and start painting MDF purple. They seem to be glamorous stylish people who tend to put facades onto things, who package things in pretty ways. It's fluffy it's shallow. I've spoken to engineers about this and they have respect for designers but in a different way to how you want to be respected. Breaking down these barriers

> and starting to put forth more meaningful ideas about this alternative discipline of design is imperative if you want to be taken seriously in the outside world, especially, as we're doing in this department in aiming to collaborate with scientists and engineers. For them to want to let us in their door they have to have a much better idea of what it is that we do.

Having a good description of critical and speculative design practice might help how the practice is seen. It might change the image of the design profession and what designers do. Especially when they are engaging in less familiar activity such as speculating on scientific futures or passing comment on social concerns thorough a language of objects.

> **JA:** One of the starting points would be to have good description for it, and I think, what a lot of this turmoil now is, is people putting their flag in the ground and trying to claim this territory.

Auger interrogates his practice through research.

> **JA:** For me I'm not trying to theorise too much, so the core bit is the methodology itself, the by practice element, to run through a case study of how. My recurring theme is the role of technology, so it almost becomes a philosophy of technology, asking what we want from technology and arguing that designers are perfectly placed to do that because we somehow translate technological things into products. So engineers, science via engineering becomes a usable technology, that could somehow become manifest in our everyday lives. How that happens is through a process of design.

He discussed how designers could look at activity in the social sciences as a point of departure to understand user's relationships to objects and contexts of use. Because designers are trained to engage with users, observe, and understand object use, they are well placed to enter a discussion about material culture.

> **JA:** I think designers are incredibly well placed to be thinking about what kind of artefacts come into our houses. Not from the perspective of anthropology or ethnography but as people who produce artefacts, who explore the role of technological artefacts, who package them and build interfaces and make them desirable. For us to question it's almost a questioning of our own discipline. Behind that there is the role of technology, and then there's the role of design and putting technology into the public place. So that's really the core area that I'm interested in exploring and I think the theoretical side of design looking at material culture is interesting for the design discipline to understand itself.

The interview focused on Augers design process.

> **JA:** What my particular practice is interested in is creating a more democratic way of thinking about the role of products and the technology within. Applying pretty much exactly the same

rules as I would if they were to become a commercial product. Just removing the final commercial element, that's the bit that makes it messy but all the other criteria is the same. The technology has to be feasible just as if I were to put that into the market place. It has to be desirable. If it's not desirable people won't want it. So that's looking at the form, the aesthetics, the behaviour and the functionality of it what it does. So all of those things. I'm trying to tap into the current mainstream ideology or the belief systems, the desires, the fashionable, what is a trend at the moment both in terms of form and function. If you get all of those things right, this is the tricky bit, it will disseminate, it will get out there, people will want to publish it, they will want to talk about it. You've got to have an image to represent the object, which is publishable, and it's these kinds of strategies that I am very interested in and have been working on for eight to ten years. Get them all right and the work will have a life of its own. So when you were talking earlier on about where dissemination happens, we do use galleries and so on but very, very, much at the forefront is using the media and taking advantage of the breadth and the depth, and the speed of the media. Using their methods and their systems, taking advantage of that to spread these things very quickly to a wider audience as possible.

Design is seen as a means to engage an audience in discussion about developing science and technology. Design can make abstract ideas tangible, through this constitute a public around an object, and engage an audience in a more democratic discussion around the issue engendered in the object. Illustrating this described the *Audio Tooth Implant*, an early example of his critical practice.

JA: The *Audio Tooth Implant* was really the very first project. It was here at the RCA during a Masters programme. I'd just written my summer thesis. I'd written on Post- humanism a little bit before the idea had been talked about a great deal. I called it *R (evolution)*. I'd been talking about Post-human futures, 'what happens when technology enters the body and so on', and we started chatting about bioengineering and implants. I can't remember how it happened but we just got on to this idea of the telephone being in the tooth.

What we were doing as we explored through the research process was looking at the people exploring Post-human futures at this time. It was around the time that Kevin Warwick had had his first implant the *Cyborg 1.0*.[31] I remember he had a chip implanted in his arm. There is a famous photograph of him with his arm wide open, a wound, a big orifice and he's having the chip implanted in there. Quite invasive surgery and what this chip would do is open the door of his office at Reading University. Around the same time, Stelarc [32] was talking about the human body being obsolete and he was proposing having the skin become breathing tissue and having the space where the lungs used to be – because we don't need lungs anymore – we'd fill up with

[31] Kevin Warwick is Professor of Cybernetics at the University of Reading, England,
[32] Stelarc is a performance artist whose works focuses heavily on extending the capabilities of the human body.

technology and have these amazing new capabilities. He'd never really talk much about what they were.

We were looking at this from a design perspective – of kind of offset values and so on. In every technology, you'll have certain plus factors and certain negative factors. "I want this iPhone in my life it will do this, this, this and this for me but it costs this much a month." There is a balance, "Am I willing to spend this much money to have these benefits in my life?" If the answer is yes then you'll embrace that. It's this negative act of desire versus negative consequences. Usually they are cost orientated but when we start talking about bringing technology into the body there's a whole other bunch of things that come in such as the pain, the operations, risk factors, what happens if it goes wrong and so on. The consequences become much more profound.

Heaping up the pros and the cons; if you looked at Kevin Warwick proposition, the cons were really quite big. Huge invasive surgery, a huge wound in your arm, all this kind of stuff, lots of bad stuff. The good stuff was being able to open the door to the office. The balance was well out of kilter for us and the Stelarc stuff was not even entering the balance situation because it was just too unfeasible. This technology is just way into the future. There is no way we can have the skin become breathing tissue anywhere in the near future because it's just way beyond our scientific knowledge at the moment. So these are the key factors when designing in this way: we have to get the balancing act right, so the negative consequences are matched by the positive the benefits of embracing the technology. The key thing is that the technology has to be feasible in the common mind-set.

There was a lot of publicity about technological development and the prowess of computer chips and around the same time. This was about 2000 and we were embracing the mobile phone. Mobile phone sales were at a peak so suddenly communication technologies had become wireless. The majority of people were embracing this new technology. Suddenly we had communication technology on our body we were carrying it around with us it was getting smaller by the week almost as new phones came along.

The key thing was to put the technology in the tooth, because the level of surgery is the least invasive it could be. It needs to be part of the body for us to make the point its technology entering into the body. But by having it put it into the tooth you could be going through routine dental surgery, but rather than having a cosmetic chip or a gold implant, in the filling going they could just take that cavity and pop a computer chip into it and suddenly you get these new capabilities. So the invasive level is not too bad. The cost levels wouldn't be too bad because the technology is not that much iterated from what's in a mobile telephone. But the benefits are quite vast you get this new level of communication technology built into your body. The way we communicated that in the exhibitions and talks a made it very clear how it would work. So you've got the desirability, you've got the level of invasiveness that is not so bad. Getting the balance of all these things right made for a thing that people both could take seriously and could imagine having in their lives. As a result the press just embraced it completely.

Figure 5.13. Auger Loizeau, *Audio Tooth Implant,* 2001.

The interview moved to discuss the challenges faced by disseminating work in popular contexts e.g. newspapers, magazines etc. rather than in academic contexts e.g. journal publication, seminars and conferences.

> **JA:** The pitfall of this method is that you do lose control over your image and how you are represented. You have to bear this in mind when you're conjuring up, what you're putting up, what you're putting out there. My feeling about the tooth implant was that it's very hard to actually get it wrong, because by putting the proposition forward, of it being a telephone implanted in a tooth, just by getting that much right the idea lives. People take that seriously and they're thinking about that, they're basing their judgment on it. Do we want this in our lives? What could go wrong? Is this the way we want our future lives to be, with technology coming into our body?

The *Audio Tooth* project was initiated to question what he and Loizeau thought about post-humanism they were looking to find an interesting way to engage an audience.

> **JA:** The Audio Tooth was very simple because we didn't have a critical opinion on it. We kind of did but it wasn't necessary for the dissemination. We tried that first of all to say: we want to talk about this. They weren't interested. When we pitched it as being a living real thing they were interested. So, it doesn't matter to us how they pitch it as long as the idea is out there in the public domain and people are thinking about it, our job has kind of been done.

When work is presented in a mass-media context, it is interpreted and reported on in ways that they might not be if the work were disseminated in a research context. In a research context, there is more control in terms of how its aims are perceived.

JA: The press were all over the place with it. One thing that I do realise is that you can't assume anything. You will tell them one thing and something else will come out. If you can take advantage of that, or not lose out too much along the way, then it's not a problem. It's just a good thing that the ideas are out there. The way I look at it, you talked about dissemination earlier in galleries, magazines, journals, blogs and so on. For me the critical thing is to be thinking about who my audience is on every level.

If I'm talking to people in the industry, other designers people who use or develop technologies, such as the engineers and so on, the media is the wrong way to talk to them. They're not the people I'm hoping to approach through that dissemination. With these, it will be through conferences through one on one discussion. It will be through talks where there is a question and answer session afterwards. It will be exhibitions where I am standing by the work and I can talk through in detail. I can talk through the methodology the questioning element of the pieces and so on.

If it's the general public or the users of the technology then it's the media, but the conversation becomes much more low brow. It's more of a general discussion about the role of technological products. Even in that, you can make the small interventions. The blogging world is crazy so something like the tooth implant made it onto slash.com and within the space of a week, there were over five hundred comments. That's debate, that's discussion. That is the product for me. That's proof that the system works. The majority of them are stupid very pathetic comments, but in the midst of that, there are some very poignant remarks that people were making.

The important thing and the bit that I'm very interested in and the thing I'll be writing about is validation. In a more academic context there are set methods, there are set ways of validation your work, such as getting it published getting papers written at conferences and so on. These have been to a point been brought into the critical design world. A lot of the early CRD days people would be writing papers and going to conferences and so on. I don't think it's the correct way of doing it at this point. What I'm looking at are alternative ways of validation because you just can't map straight over. I think that it's a very different approach to dealing with technology. Previous ways of doing that aren't necessarily going to work with this system. I think it's critical that we start exploring how you can judge the success of a critical design project?

The interview moved to discuss judging success of a critical design project. Auger aims to do this through reflection in order to develop criteria to judge.

JA: For me it's very much by practice so the artefacts are very much the consequence of the research and there will be artefacts coming out the other side of that. Now if those artefacts stay on my office desk and nobody ever gets to see them I've failed. But if people pick up on it and it gets exhibited it goes into shows and exhibitions. For me that is the validation process. If it's picked up by the media, but then categorising what type of media I'm talking about. So for example with the tooth implant we said from the early days we were talking about using this

dissemination as a way of getting people to talk about it. Our goals were to get it in the Sun newspaper and Wired magazine and that's the way that we still think of it to this day.

It sounds a bit shallow but if you're talking about your audience, if you can go for as broader mainstream public audience as the Sun readership, over two million people a day read the Sun so you've got the breath of the British reading public there in a morning. Then you've got the geekyness of wired magazine. With the robots there [Auger pointed to the carnivorous clock mounted on his office wall] they got into New Scientist and there was quite a good article about them where as at the same time they were on the Metro you know on the underground.

Putting the objects out in the public domain will essentially determine the success and validate the project, but only if the objective is to provoke debate. If the objectives are academic and orientated around knowledge generation, questions of validity and success are not as clear-cut. Like Ball and Naylor the reflective approach used to understand practice is important. However, this presents more evidence of where attempts at analysis of critical design are based on models of reflective practice. There is scope for a more objective interrogation of the practice.

Figure 5.14. Auger Loizeau, *Flypaper robotic clock. Material beliefs* 2009

The interview moved to discuss practice as a theoretical activity.

JA: The interesting thing for me, the challenging thing, is the by practice element. It is all I've done for the last eight years. So I did a Masters degree here and then started practicing in this field of design. Jimmy and myself went off to Media Lab Europe where we continued

researching for about three years and then I did a normal a live project, a real industrial design project in Japan and then came back here and started teaching in this department in 2005. Got Phillips funding to do the *Smell* project and so on. I never had to write about what I do, and I never had to justify what I do, and I never had to validate what I do, until I started the MPhil last year. So this idea of basing it or referencing literature, critical theory or any of those, is something I was never forced to look at. I didn't have to base it on anybody else's thinking, or writing, or theories at all. I suppose the only one I would say is Tony Dunne because he was my tutor as I was student here so we are products of his thinking. But Tony would never be talking too much about the academic side of things. He loves the idea of ideas, of artefacts, of things we can touch and play with, and questioning through product. Now as I'm reading more and more I'm kind of catching up on a little bit on those things. So the work I'm doing at the moment will be better referenced and as I say I'm looking at a lot of material theory, Daniel Miller type stuff, the Baudrillard type thing, *The System of Objects* is sort of leading to some interesting reading. My reading is based very much on trying to get my head around robots because that's the area of my study at the moment.

So first, I've got to get my head around robots, the subject matter. So that could be synthetic biology. What I would then do is talk to people who are developing synthetic biology and look at where it might go in the future and look at what kind of industries would be interested in doing that what kinds of artefacts, products and services might arise as a result of its development. With this one it's robots so there is already a huge idea very much in the public imagination. There is an idea about robots and what robots are at the moment. There is a huge disparity between what we think about robots, what they could be, what they should be and where they are actually going. There are a vast number of people who have been proposing ideas around robots. So you've got science fiction, you've got within research science research and technology large corporations like Honda putting forth ideas about robots and then people like Baudrillard who has written about automation and robots. People like the material sciences, materiality Daniel Miller type things are talking about the roles of products and how they have evolved over the years. Labour saving devices and how the landscape of the home has changed as a result of artefacts, and so on. So really at the academic level they are the things that are inspiring me at the moment or things I'm referencing too are basically a product of or being influenced by the subject of robots.

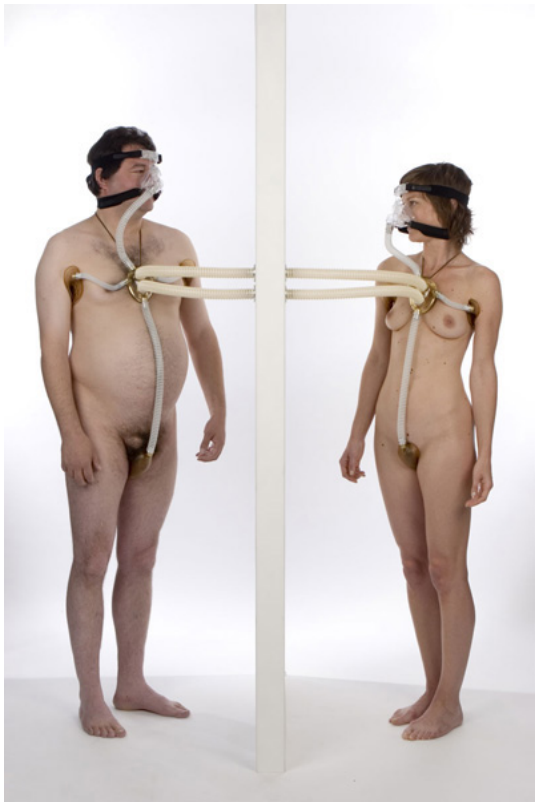


Figure 5.15. *Smell +: Dating and genetic compatibility Smell Blind date*, 2009. Design probes for Philips

Auger reflected on theories grounding the design work.

> **JA:** From me having said what I've just said. The underlying thinking and reading that I have been influenced by throughout the years is probably philosophers of technology. So obviously Heidegger and Marshal McLuhan, but then, more recently, Langdon Winner with Whale and the Reactor. Bill McGibbon did a book called 'Enough' which is quite interesting, particularly when I'm talking about robots because of the idea of them being the ultimate labour saving device.
>
> I suppose the philosophy of technology is inspirational and I think an awful lot about what they are writing about. I suppose how I would like my work to be operating is asking similar questions and philosophising about similar things but rather than using the language of writing I'm using the language of products which is probably less poignant, but it's easier to misinterpret, and it's less targeted, and it's less in detail, but it's much easier to disseminate, it's much more appealing to a broader audience. So my goal would be to say Ok so let's have these kinds of discussions but let's have them in a more democratic way. Let's break out of the ivory towers of academia and take this thinking about technology to a much broader public audience and let's do that trough products and artefacts that people could recognise and maybe then make value judgements on them.

The key thing in critical or speculative practice is understanding the context; what is it dealing with, who is it for, where will it disseminate are all key questions. Auger

described how scientists and technologists are not often as sensitive to context as designers.

> **JA:** The one thing that I always talk to the students about is the context for where your artefacts will go and what your are speculating about. This is my critique about the way technology is developed now. So it's looking at robots who's developing robots and why are they developing them? There is a lot of robots where they're just in labs. You know it's great, so let's make a robot that's social, it recognises when there is a human in front of it. It recognises when that human is smiling or winking or raising an arm up or will react back and so it gives its some illusion of it being intelligent socially. Ok well that's fine but what's that robot going to do outside of the lab? Let's put it into everyday life now. Where's it going to live? What is it going to do? What's its reason for being? That's something that rarely is addressed but something that designers think about all the time.
>
> If I'm approached by Gaggia: "Can you design a coffee machine for us?" The lab approach would be they'll go away and they'll do something. The designer would be ok so what's your audience for this coffee machine? What kind of price tag are we going to put on it? Is it the kind of throwaway disposable cafetiere ten-pound thing or are we going up to about the three hundred-pound espresso machine with milk frother? So what kind of materials does you company normally use? The manufactures that you're using, where do their skills lie? What's your brand like? We're asking all these questions then we're looking at the type of people who would be using such a product, paying such an amount, and what their kitchen would look like.
>
> Another thing that I am inspired by is looking at natural systems and adaptations this is something I use a lot when I talk about these robots and how things adapt or they fit into a specific environment. Things like camouflage. I think it was the gypsy moth. I think was white when the trees were white and then the industrial revolution came along and they became black and over ten years these moths became black. So to survive they have to fit into their environment. Products are exactly the same so if I were to develop that thing, well my example was robots shiny exposed metal gears cable and so on how the majority of them are in labs at the moment would not look in place in the human home so let's make them look more like products or pieces of furniture or the kind of things that you would hang on your wall.

Finally, Auger returned to emphasising the importance of context, of knowing how to ask questions about the issues that the project addresses. This is done in the same way that a designer operating in an orthodox way needs to understand and interrogate the conditions in any design brief in order to successfully project a concept.

> **JA:** Context is everything so if I'm looking at social robots my question is what kind of social circumstances are you talking about because I'm interacting with you now and we're doing it a certain way based on the nature of our argument based on who we are. […] So context, circumstance are absolutely everything. I think that's something that designers by the very nature

> of what we do, we're thinking about where our products will exist in the real would and that will influence hugely how we develop them. That is for me the criteria and the rules I bring in when I start doing speculative things. The rules should be exactly the same. So I'm thinking about my audience where I'm disseminating, who I'm disseminating to, using a language relevant to that audience.

Rather than doing critical design Augers suggests that his work is better characterised as Speculative Design in a context of critical design practice. He aims for the work to ask similar questions to philosophers of technology but rather than using written word, he too suggests that he uses the popular language of product. Designers are well located to question technology because they translate technological things into products and are by training, experience or tacit understanding sensitive to contextual considerations concerned with present condition and projecting in to the future. However, Auger acknowledges that this language is less poignant and easier to misinterpret. It is however more accessible to a larger audience and in this sense makes a discussion more democratic.

Auger practices a form of technocratic visualisation speculating on the potential application of developing science and technology. He has developed the approach through a series of practiced based research and design projects. It operates by the same methods of orthodox design the only thing that is different is commercial element. By removing the commercial aspect from the requirements of the object, it takes on a different agenda, questioning the process that gives birth to it rather than blindly conforming to it.

In describing things to consider in the practice, he outlines how the propositions need to be feasible in the common mind-set: a balance needs to be struck, desirability, feasibility and technological capability. These allow people to take the work seriously and imagine having it in their lives. This is where the speculative approach relates to methods of design fiction. When the work is feasible, the user can base judgements on the work. The work needs to be feasible for the work to disseminate and debate to occur.

Auger comments on consumer culture, the role of products with particular focus on the ubiquity and function of technology. He looks at what is being developed in laboratory contexts and projects the technology into everyday life. He imagines futures and builds scenarios of use for domestic products that incorporate new technologies on the

horizon. Through the development and dissemination of these speculative products Auger aims to instigate a broader analysis of what it means to exist in a technology rich environment both in the present day and in the near future. Auger aims for this analysis to take place over a broad range of contexts to reach a broad audience beyond designers and researchers scientists and technologists developing new technologies.

Auger addresses the need for rigorous investigation into the practice as means to develop the criteria and tools by which to judge critical and speculative forms of design. He expresses the need for reflexivity on practice and that this might provide the criteria on which to judge critical design. Also the need to change how the product designer is perceived. To clear ambiguity surrounding critical design practice in order to engage with experts. To break down barriers and put forth meaningful ideas about a design discipline. There is a real need to be able to give people a better idea of what critical designers do beyond the associations made to art.

5.7 Ramia Mazé

Ramia Mazé is a design researcher at the Interactive Institute in Sweden. Her academic background is in interaction design, computer related design and architecture. She holds a PhD from the Interactive Institute and an MA in Interaction design from the RCA London. She lectures on art, design and technology programs and is on the faculty of the Interdisciplinary Studies department at Konstfack University College of Arts, Crafts and Design Sweden. At the time of the interview, she was a project leader in the Design Research Unit in Stockholm and in the process of managing the *Design Act* project. She has published and spoken extensively about critical practice in design. The interview was conducted at the Kulturhuset municipal culture centre and gallery in Stockholm in December 2009.

The interview began with Mazé describing her understanding of critical design. She explained how her relationship with critical practice began with her engagement in craft and participatory design and explorations into the materiality of technology. For Mazé critical practice and design research are interrelated.

> **RM:** My arts and crafts CRD project twelve years ago, really worked with materiality of technology. That continued in Sweden, this arts and crafts making, learning through doing. Traditional arts and crafts history somehow, which translates into a certain kind of design research that orientated the material practice. I'd also done a lot of participatory projects, both at the RCA and then when I came to Sweden. That was another way of tying my previous work into the current work. I wouldn't describe the work that I'd been dong at the RCA as critical design but neither would I say that anyone I studied with would.

Her understanding of critical practice developed by reflecting on *Static* a practice led research program. Static did not begin in a framework of critical practice, however, through the project, critical, alternative and provocative design emerged as a theme. This correlates with other designers that describe how what they do is not critical design – and they do not aspire to the label – e.g. how Auger Loizeau's Audio tooth was not conceived as critical design or Toran's apathy towards categorising his work as such. Mazé's perspective provides more evidence that the critical attitude emerges through the work implicitly.

She acknowledges that there are communities of practice outside of critical design that have a long tradition of materially engaged critical work. She makes particular reference

to craft-practice, which by its nature has always had a critical, anti-essentialist component.

RM: The two main themes were the materiality of energy how it appears, how it is materialised, how it is made visible. Another other thing is how that materialisation and visualisation causes or induces reflection in use. That second notion came from a phenomenological interest in the notion of how materiality and interacting with things creates an opportunity for awareness and for knowledge. That whole phenomenological contact with the real is the way that you understand things in the world. Not a cognitive notion but a phenomenal notion, and that comes from the research director at the Institute Johan Redström who's originally a philosopher and his background is specifically in phenomenology. Then the second thing is Tony Dunne's thesis, which had come out, and many of us had been reading. We have been interested in the notion of aesthetics of use for example, which has been a prominent theme in Johan Redström's work.

On that project [Static] I was a research director, there were three research directors. We sort of took it in turn over two years. We had a range of design examples produced which were deliberately diverse and very much ingrained with the orientation of each team. We never assigned a brief, each team formulated their own approach to those two thematic starting points, to what we call a program, which is how we organise the research. Some of them came out as quite speculative or more provocative examples. Tactical media is a theme for some of the research we did in Gothenburg for example, really working with provocation and public space in an activist way.

Figure 5.16. *Free Energy Static* 2006. Proposed design examples to spark debate in everyday public situations. Power stations are placed in unusual places in the urban environment where users stop, recharge and communicate.

Mazé identifies speculation and design activism as a function of critical practice.

> **RM:** Then there were other projects that were more craft based. There is a theme within the Swedish discourse around conceptual craft, and Front design who we collaborated with, orients in some ways to that discussion. Craft is a way of relating techniques of making but also the social engendered and cultural notions of making. Questioning taste for example, what is good taste, what is bad taste? What is the role of the hand, the woman and the body? These are general themes in that kind of craft. It's called Koncept design or conceptual craft.

Figure 5.17. Front Design. *Lighting for Static,* 2006. The concept explores how energy use might determine form. The heat from the lamp causes the shade to bubble and deform.

Mazé explained how in later projects expressing a critical position was the intention. She provides evidence of how critical design work is valued in a scientific paradigm in Sweden with particular reference to projects exploring the materiality of energy and visualising its consumption. These projects are supported by scientific funding bodies.

> **RM:** In the following research project *Switch* critical practice became a much more explicit theme. Now we have a design research programme starting for three years which is a theoretical research, with funding from the national science council, in which we look at practice based approaches to critical practice. We also look at art history and design history and how those two different kinds of research can look at design artefacts, design making and design practice and then how the specific focus of each is challenging concepts within sustainability.

Figure 5.18. *Symbiots, Switch* , 2008. Queries an increasing competition for natural resources and current human (versus eco-) centred design paradigms.

Mazé went on to describe what she took the function of critical practice to be.

RM: What I am interested in is how you think about that motivation, making a break with the current definition of need for example, or making a break within a technologically driven and therefore incremental definition of product development. So, these visions of the future were an efficient way of suspending disbelief and asking actually this question what if? I am not so interested if we call that concept design or even if they ever called it that, but instead saying that this is one way in which critical practice can operate to make that break from the here and now and a certain set of defined conditions and circumstances to project something else.

In explaining this she talked of the relationship between critical design and critical theory.

RM: Critical design may operate through critical theory. But differentiating critical theory from the Frankfurt school. This much more fluid and continually critical, perhaps anti-foundationalist notions of critical theory today, where you don't take this purely oppositional stance, this alienation discussion which has been actually very present both in the critical architecture in the 1980s and also in critical design as it was formulated ten years ago. But you look at a more fluid notion of asking questions of what for and for whom? So, that it's not just only opposing a system, but you are actually looking at specifying what are the values in place, what is left out, who's interests are served, and it's a much more – if I borrow a term from Stan Allan – it's a "radical doubt", not about revolution, not about opposition, but about simply building in a way of asking questions, suspension of disbelief or break from the what is or the expected trajectory of what will be next, based on assumptions and norms built into society, built into people, built into product design or design in general and to see how you might make that break, rather hard questions about what's at stake which is a political question.

For Mazé critical practice contributes to a disciplinary discourse. Criticism from within the discipline means that those involved try to engage in ideological and intellectual questions through design. This sort of activity makes up the foundations of a discipline.

The interview moved to discuss Mazé background in Interaction design, Architecture and Craft she described these disciplines as a resource rather than something to label herself or her practice by.

> **RM:** It's interesting the word framing, that's different from the word describing. I describe myself as a design researcher manager and educator. I think of what I do probably right now as design research. I take a role as a project leader, project manager and educator in different contexts. Interaction design is a resource that I have it's a very important orientation that I have, but I would say that Architecture is a very important and present resource in what it is that I think about.

She expressed the futility it attempting to develop methods for critical design practice. But the importance in trying to understand the practice.

> **RM:** What I explicitly try to do is make a very different counterpoint in interaction design because I want to use something as a resource. If you are looking at a field that is s closer to industrial design you want to know what are the methods there. People tend be more interested in congruencies what is the specific translation of that idea or concept "where did that come from and where did that go?" I'm much more interested in equivalences between things and I'm much more interested in actually developing a very deep understanding of a concept in its discourse as its situated historically and in examples of practice. To say what are the consequences if we were to think of that. Not let's take that and blueprint it as a series of methodologies, as a set of aesthetic principles and let's transplant that here, which is a bit dangerous when you work close together.

Mazé expressed suspicion of how effective a representational practice in the semantic tradition – design illustrative of theory e.g. Cranbrooke experiments and RCA projects discussed in chapter two were carried out – is to developing the intellectual base of the design discipline.

> **RM:** If you look at for example product semantics there is a lot of very literal translation of a theory into a practice in some way. I am not interested in that but rather understanding what working with theories does for practice what that might also take a different set of concerns in this situation. I also try and avoid congruencies that aren't necessarily relevant simply because they have different histories however you define it here you just simply can't make those equivalent disciplines and that makes a tension that is really interesting to work with. Because it

> [critical practice] comes from so many different traditions social science, cognitive science, psychology and so on.

She describes critical design as a process of sense making, a way of using design to engage in a discussion with people with a range of experience and different expertise.

> **RM:** It's much more interesting to use these types of practice and the terms that describe them, to motivate a position in relation to other positions. I would describe a lot of things differently depending on who I am speaking with if I'm speaking to a social scientist it is different, if I'm speaking to an architect its different, as well if I'm talking to a crafts person it is different and that is important because these terms shouldn't fix you into a location but should allow you to explain the significance of what you are doing in a way that is meaningful to somebody else in a way that makes sense.

In line with the objectives of this study, Mazé spoke of the need to have a vocabulary to discuss examples of critical design practice and the importance of activity that offers a forum for discussion of concerns surrounding critical and socially orientated design practice.

> **RM:** Any activity that helps us build a discursive a frame for discussion is always going to be useful and important especially as you say for designers who are trying to understand. Any conceptualisation is going to change quickly. Ben Singleton talks about "agile practice". People choose the term speculative and grab it because it allows them to talk to a certain audience in a certain way about something, in the same way that in my year everyone graduated as an Interaction designer half of them call themselves artists simply because it allows you to open certain doors. That is what I mean about motivating the terms towards different contexts. But as you say anchoring certain moments without fixing them but allowing them to become objects for discussion. This raises issues that we can then discuss more specifically and appropriately.

Mazé drew attention to how descriptions of practice; critical design, conceptual craft, conceptual design, speculative design or even conceptual artist, are used to open certain doors at certain times, to make certain publics and audiences accessible. However, she implied a need for a more holistic perception of critical design and the need to question what it means as part of a larger design history and theory. Throughout the conversation, Mazé described critical design practice among a larger history of material practice with particular attention paid to craft and participatory design. Through statements such as 'learn by doing' and referring the radical nature of craft practice and the phenomenological and tacit discourses that surround craft practice, she described how such thinking provides a foundation for developing critical practice in product and design. This perspective is informed by the Scandinavian design context. The

Scandinavian tradition in product design is influenced by craft practice, material practice and Scandinavia is the historical home of participatory design practice. It has a strong tradition in these areas. It is unsurprising then, that emphasis is placed on active critical participation in Mazé account, where in others critical design is seen as an authoritative practice, which produces less democratic work and as a result is more cynical in its tone.

She describes how critical design may not always be the intention and how projects become critical in character as the work progresses. The critical attitude emerges as the project progresses. For Mazé critical design allows the designer, to question their motivations to make a break with current definition of need. To break from a technologically driven, and therefore incremental definitions of product development.

In Mazé's account a purely oppositional stance is avoided. There is a conflict in the work and a certain level of ambiguity is required in the design that is delivered in order to raise questions on a particular concern through design. Operating in such a way the critique does not just oppose a system, but looks to specify what are the values in place, what is left out, who's interests are served how might critique add value to the disciplinary understanding of product and interaction design. She describes the activity as being about "about revolution, not about opposition", about building in a way of asking questions, suspension of disbelief or break from the what is or the expected trajectory of what will be next, based on assumptions and norms built into societal convention built into product design. The notion of materiality and interacting with things creates an opportunity for awareness and for knowledge. Materialisation and visualisation induces reflection in use.

5.8 Tobie Kerridge

Tobie Kerridge is a Research Fellow in the Interaction Research Studio at Goldsmiths University London, a visiting researcher at the Institute of Biomedical Engineering at Imperial College London and an honorary Research Fellow at Edinburgh College of Art. He has recently contributed to research projects supported by Philips, Intel, France Telecom and the Engineering and Physical Sciences Research Council. He is a visiting lecturer at Goldsmiths, the RCA and at the Technical University Eindhoven (TU/e). His research explores how design methods can be extended to provide individuals with access to and creative authorship over technological innovation. He was project leader on the EPSRC funded *Material Beliefs* project. As illustrated in chapters three and four he is an active contributor to design theory in the field of speculative design practice. At the time of the interview, Kerridge was writing a PhD in speculative design. The interview was conducted in January 2010 at the Interaction Research Studio Goldsmiths University of London.

The interview began by questioning Kerridge's understanding of critical design. In answering, he outlined how his association with the practice can be traced to the RCA's Interaction Design course.

> **Tobie Kerridge:** What I think is interesting about critical design is its relationship between Dunne and Raby's practice and the teaching. There is a momentum to it isn't there? If you trace it out from Tony's thesis and then into *'Hertzian Tales'* it starts to emerge as a notion and then it's gradually builds momentum doesn't it?
>
> If you tracked it through the ten years since the thesis was published. Where you see the term used for the first time I think in relation to Kristof Wodiczko. It's at that moment where there is the first mention of critical design – well it's the first one I've found. It's the only mention of it in fact in the thesis. Obviously when it was published in ninety-nine then it takes it on in the title and then it's the birth of it.

He starts to identify how the practice in its colloquial form synonymous with a critique of technology is largely built on student projects and has gathered momentum over the past decade.

> If you go back to the show in Israel *Pop Noir*, I've just been looking through that catalogue. There are four short essays and they all repeat each other they are all very careful about making a case for what critical design is. It's this process of almost empire building initially. That's the first show associated with it that is very much Tony [Dunne] and Fiona [Raby] and their students. In terms of the keeping of the boundary of keeping or growing this definition if you like. From

then on it becomes less important because it kind of diversifies doesn't it and you see these changes as it moves into different forms through biotechnology or other technologies.

He talked of the relationship between critical design and Dunne and Raby's teaching practice. He describes how critical design can be defined, by their practice, and the student projects that they have been involved with.

As the other designers interviewed in this research Kerridge was reserved to call himself a critical designer.

TK: I guess my practice as a student was at quite an important time when they were looking to develop those kinds of themes and issues. So the work has always been associated with that. Definitions of *Biojewellery* in particular have come out of critical design and also – I guess – that practice has contributed to critical design. But I certainly wouldn't think of myself as being a critical designer. It's sort of inescapably linked but it's a very hard thing to unpack.

Like Auger, Ball, Naylor and Mazé, Kerridge is also looking to build understanding around the practice through reflections on his practice. He too describes how understanding of critical design varies in different institutions and geographical locations.

TK: I'm going through the process at the moment trying to look for definitions somewhere. It is mainly through practice but it is also through the text around it; designers' statements and blogs, interviews, articles, all these things proliferate an identity for critical design. I think there is a lot of careful work done on the boundaries of it to keep it together. I don't know how that relates to other versions of critical design in other countries because there is definitely stuff in the TU/e (Technical University Eindhoven) and design academy in Eindhoven.

The interview moved on to discuss the relationships found within this community of practice with particular attention paid to the relationship between work carried out at the interaction design studio at goldsmiths – a hub for speculative design activity and The RCA another hub of activity.

TK: Well I think the strongest links were when Bill Gaver and Tony Dunne were sharing this research environment and they were writing stuff. They wrote the cultural probes paper for example. Bill won't mind me saying that his work, and the people he's worked with, have always been more towards the HCI community outputs, and the way it's been valued and its natural home has been within CHI for example. Whereas I think the things that Tony has pursued has retreated from academicism and he's more interested in how it's arranged through exhibitions and through interviews and publications.

Kerridge described how traditionally the practice operated, or at least disseminated in a HCI context. A view of critical design practice today is that it is disseminated in two different contexts: Through exhibitions, and through traditional academic channels.

> **TK:** There is a nice quote actually and I think it might be Fiona's chunk of writing in *Design Noir* where she's saying we're designers we can do this stuff. Why don't we behave more like architects, why don't we do our research work in more publically available spaces and so here she's making a case for if you are going to do stuff then do that stuff not for papers or journals but do it for bigger audiences. There's a point in *Design Noir* where they are trying to build this idea of design for debate and design for discussion and where design kind of drives effects in bigger groups of people.

The interview moved to discuss Kerridge's perspective on critical design as research. Like Mazé Kerridge describes how critical design is not necessarily concurrent with conceptions of oppositional critical theory. Increasingly other critical frames of inquiry are informing the practice, notably Science and Technology Studies.

> **TK:** There is a quite an interesting paper on this by Alex Willkie and Matt Ward it's called Made in Criticalland (Ward & Wilkie, 2009) and it's talking about replacing if you like the cannon of what design students look at. Rather continental philosophy and all that, there is a case that it could be driven by STS and other approaches, other kind of practices. So this idea of I think criticality as it relates to education is really interesting. I think it always goes back to that there are always the exhibitions and the things but it's been driven I think through pedagogy. Through students interests and passion for that. It's the perfect thing to be doing when you haven't got a job [laughing].

Kerridge described how his practice sat in relation to this. In answering, he referred to *Biojewellery* and described the collaborative aspect in the project, working with Nikki Scott, a Jeweller and Ian Thompson, a research fellow in oral and maxillofacial surgery at Kings College London.

He offered an implicit critique of critical design , describing the repetition to be found in contemporary examples of practice. In *Biojewellery*, they attempted in some way to move beyond the conceptual to realise the project, and shift the design of the jewellery into a truly scientific context to engage public debate.

> **TK:** Well Nikki Scott Ian Thompson and myself had done *Biojewellery* and we were looking to expand that and this idea of designers going into labs. At that point, I thought that it would be interesting to try and build on that to try and make it more robust. There I thought that critical design – or whatever – could become a bit repetitious. You can see the same stuff, it's got a very short history, and you see a lot of the stuff coming around again. I thought it might be

interesting to deal with a particular issue of how design practice relates to public engagement with science and technology, which is another set of industries. That was how *Biojewellery* was funded through the EPSRC, through their public engagement program. That was then a conscious effort to extend this way of working into a particular area.

The interview moved to discuss more examples of Kerridge's practice, what the projects involved and the challenges faced in the projects.

TK: With *Biojewellery,* people were always interested in it. People liked it as a project and so we thought we would pursue it and do it for real. Of course, it was just a scenario when it was a student project and we made cow bone from a butcher in Kensington and Nikki made this nice prototype ring. With *Material Beliefs,* we thought that we would try and do it properly. Ian fortunately was quite sympathetic to all that kind of stuff he was very interested he had worked with an artist called Paddy Hartley and they did some weird face corsets and stuff. Ian knew how to write an application to the EPSRC for public engagement stuff. I guess that was a crucial moment to get that funding for it and then work out how the hell we were going to do it. Then that was quite a nightmare to get ethical approval. To get the cells from people that was a bit tricky. It dint go through when it was structured as a public engagement application but then Ian rewrote the whole thing and took it to another ethical board and wrote about it as an experiment which it was.

Figure 5.19. Tobie Kerridge and Nikki Scott, *Biojewellery concept,* 2003. Human bone is cultured and set with metal to make jewellery.

In terms if I were to compare the project I had to do with the *Vital signs* [part of material beliefs] and *Biojewellery* its fascinating to see how they performed in terms of what they are supposed to do which is to go out and engage so *Biojewellery* was much more successful in terms of how it managed to find its way to different contexts and sort of communities and it worked with real people which is a really strong feature of it. Whereas the *Vital signs* there are aspects in it that I am personally more interested in terms of the kind of digital stuff and how bodies are linked to

technologies etc. and making I really enjoyed that. But obviously the outcome hasn't been… I don't know what you'd call it if you want to call it successful or hasn't been as resonant in as many areas so I find that really interesting. Talking about it in terms of success or whatever when I review it and look back on it that's not a disappointing thing which I think it's quite interesting to pick apart why that is and I think there is a way there may be and this way come up in my thesis of how to talk about how these things perform what make them successful because people say well how do you know if it's not a product if it's not got a function how do you evaluate it? It's sort of interesting to try and think about how you would talk about those kinds of characteristics. I'll probably do that I'll probably link it to just how it's multiplied so the *Biojewellery* thing just went nuts and it's really interesting to see where it went and how it went.

These two projects were conceived as research and funded by the EPSRC. The interview moved to discuss the objectives in each project.

TK: Those proposals were very clear in outputs. There was the question of public engagement whether it was the science museum whether it was café scientifique all these formats for delivery. I don't know how interesting that is. We were trying to rethink that. I have very strong opinions about how you're letting people come across technologies that are not yet formed. Stuff that's emerging and doesn't have a certain direction to it. I think it's really important the way in which people encounter that so that they can get their heads around it and treat it creatively. Underlying it is this real interest in how you handle encourage those modes of encounter.

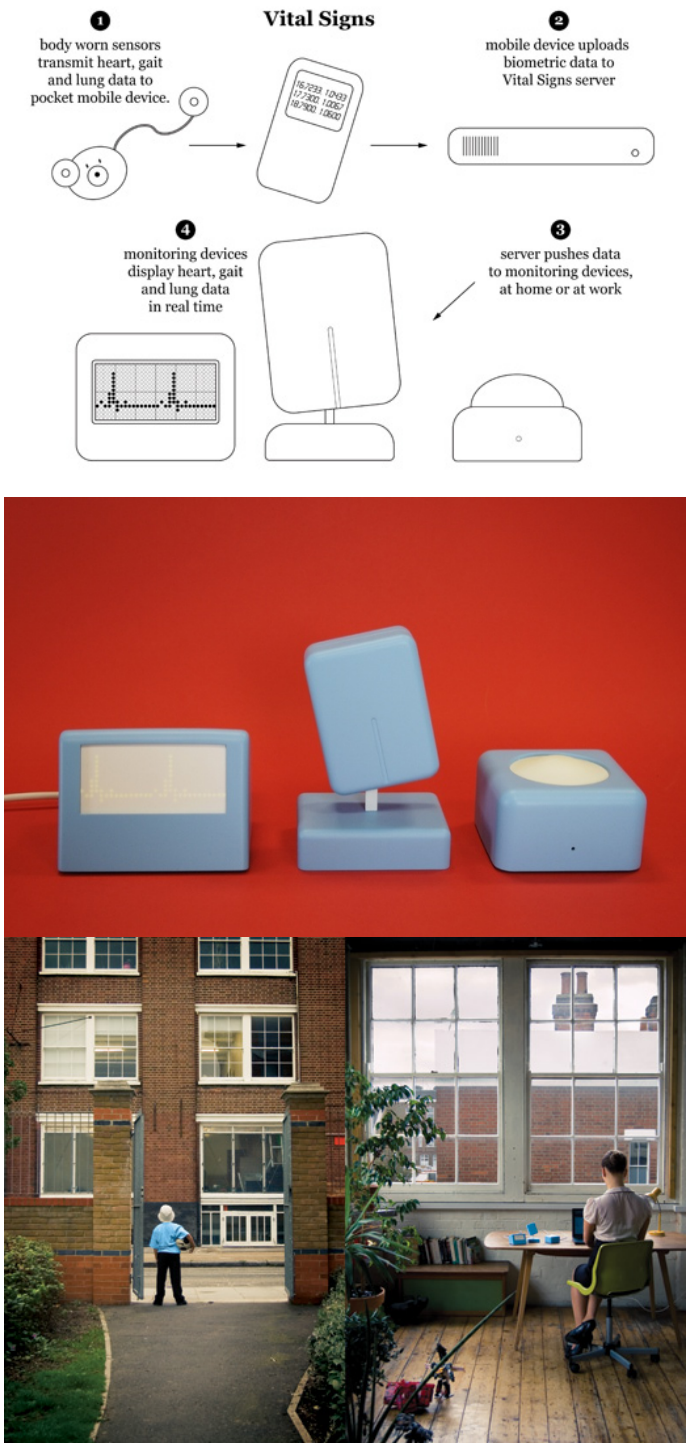


Figure 5.20. *Vital signs,* 2009. Product prototypes monitor heartbeat footsteps and breathing. A child is monitored remotely in this scenario.

Kerridge's PhD study explores the role of critical and speculative design in the context of public engagement. In a similar way to Auger and Mazé – who in their interviews call for an investigation into critical design practice to develop it – Kerridge describes a crisis in the practice.

> **TK:** Well the main thing is about a crisis in the practice and thinking, and not really understanding what it is actually doing. In the thesis I'm trying to unpack a little bit what I mean by Speculative Design and that all links to these conversations about critical design. Then also how I think that relates to public engagement and what public engagement actually is. That's what the really interesting bit at the moment is; using STS to unpack an account of public engagement. I'm moving out there to lots of reading that I haven't done before and that's really fascinating. I don't know what will happen at the other end but the main thing is about what is speculative design, how does it contribute, does it contribute to public engagement and what is pubic engagement.

Kerridge was asked about the difference between Speculative deign and Critical design?

> **TK:** In that it's easier for me to supply my own terms and working definitions within the thesis for speculative design, where as if I work out of the critical design label it just problamatises it massively. I want to link it to that but I think the main thing there is that it's moving out into different kind of arenas so I guess the idea is to signal not distance but a progression.

He discussed how he uses design as a method of inquiry and engagement with scientific concerns.

> **TK:** I just think at the moment the really interesting thing is these questions about what public engagement is. This is linked to these ideas of how the everyday links to technologies. The whole public engagement thing is the idea that people are distrustful of novel science or the science that moves out into the everyday – this conflict the BSE the GM crisis. There is a critique of that model of how people need to be taught about the science. It's the same in the context of design how people have to buy products it's that model of the relationship between the user and the learner. There is lots of cross over's I think. I'm just really fascinated in unpacking a model of power and accountability in how we use stuff and again we're both consumers aren't we we're all buying this stuff and we're all doing things. It's a kind of an enquiry that's driving it and enquiry into how these relationships are formed and how to make them more transparent I guess.

Kerridge was asked about framing his practice.

> **TK:** Well its design. I work in design studios. I work with designers. The work does different things doesn't it? Sometimes your work might be firmly within a design exhibition other times it might be in a gallery and then publishing. It's a set of practices that go out and do stuff don't they? Usually that stuff is design. I don't see myself as an incredibly competent maker for example but I think I have huge interests in everyday things, in objects, in products in what they are and how they are used. I find that all fascinating

He was asked if he would still claim the work as design work when it is shown in a context associated with art?

> **TK:** Yeah I think I would. When I write about the work, I write about design and I have little knowledge of art theory. I did an undergraduate in fine art I don't invoke that kind of writing. I don't go back to all that stuff now when I'm talking about the sort of artefacts that we're involved in.

Kerridge's interview provides insight into speculative design as a practice that engages with experts from science and technology. It has developed out of critical design. He offers a somewhat critical perspective on student projects and teaching in critical design practice and the recurring themes in critical design. He describes how this repetition of the student projects contributes to a process of empire building within the community of critical design practitioners. This is an important observation. Education is free from the constraints imposed by commercial design practice. It allows room for conceptual work, incubates ideas, and sustains this form of activity.

He discussed how the work he developed for Biojewellery and later Material beliefs, moves beyond the conceptual and the products are 'actually' realised for public dissemination and debate. Realising the work creates a new set of challenges and opportunities. The work is no longer conceptual, but remains non-commercial. The benefits of having 'real' work are that it opens new channels of engagement. In Kerridge's practice, this engagement is organised and monitored to deliver specific information about how publics engage with science and technology. He outlines a position where it is not enough to say that the function of critical design is design for debate. We need to understand how and where debate is occurring with whom and about what. Engaging a public in debate on and around the object in a context of science and technology. This ability to construct publics around the objects facilitates a

more democratic approach to how science and technology is realised for everyday consumption.

5.9 Conclusions

This chapter has presented interviews with expert 'critical' designers. The interviews are useful because they identify in detail the designers' perspectives of what critical design practice is and how it functions. They provide evidence of what the designers focus on through their design practice, where the work is carried out from and disseminated.

The first point to note is that the participants are all linked through the RCA as either alumni or faculty. This might seem like a limited and somewhat introverted sample however, it provides evidence for the strong link between a critical design canon and the RCA. This sheds light on the importance of the educational/research institution in facilitating this type of non-commercial design practice and draws attention to the difficulties in sustaining a critical practice in commercial contexts.

The interviews provide evidence that the critical attitude embedded in the designers work is emergent and not necessarily explicit. The projects are often conceived as inquiry or as research projects. The critical element comes through later from a way of viewing the world and the compulsion to question the role and application of product design. This might explain why in nearly all the interviews the designers expressed how they do not wish to be called 'critical' designers. The designers expressed suspicion of the term critical design as a label to hide behind. This suspicion extended towards trying to develop methodologies in critical design practice. They seem wary of those who attempt to do critical design for the sake of it. There are two approaches here. The first is design led, where there is problem to be explored through design. If the designer has a critical attitude toward the topic then this will manifest in the work. The second – and this is the approach that the designers are suspicious of – is where from the outset, the designer says that, "I am going to make a statement about this. I am going to challenge this. I am going to make a point of being critical, conceptual and provocative." In this context, the work is not born out of an ideological position but is critical design for the sake of critical design.

The material presented in this chapter builds on what is covered in the literature review. It provides personal accounts to a level of detail that is not seen in the existing literature on critical design. The accounts presented alongside each other provide insight into

subtle differences in the practice. The designers attitudes come from different places, some are inquisitive of science and technology, some are deeply critical of consumption, some are disheartened with how product design has developed as a stooge of capital and superficial replication, some are concerned with participatory and active critical participation.

The chapter provides insight into critical design practice, not in the hope of producing some grand theoretical convergence for critical design practice. The discussion has been presented with the more modest ambition of illustrating the range of concerns that critical designers engage with and the perspectives of the designers engaging in critical design practice. It provides textual evidence for the taxonomy. The following chapter presents a more detailed analysis of the interview transcripts to draw out salient concepts and themes found in the conversational interviews beyond those that this chapter has summarised.

Chapter six

Analysis: description, values and salience in the interviews

6 Analysis: description, values and salience in the interviews

This chapter presents the analysis of the interviews. The analysis was carried out with the design culture framework in mind. It identified information relating to Value, Circulation and Practice, effectively addressing *what* examples of critical design practice there are and *what* they address, *where* it is carried out and disseminates, *how* and *why* it is done. A code to theory method of analysis was used. The coding was carried out in two cycles. The first cycle consisted of descriptive and values coding, the second cycle of focused coding.

The chapter begins by discussing the descriptive coding. The descriptive coding provided an elemental account of the interviews. Topics were identified and then grouped thematically into a higher-level category. These categories present a generalised view of key issues discussed in the interviews. The descriptive coding provides evidence of the range of contexts engendered in the work, where and how critical design operates, and the design methods used by the designers. The elemental account generated from the descriptive coding does not provide analytical insight into the values, attitudes or beliefs of the designers interviewed. To develop an understanding of these a process of effective values coding was used. This provides insight into the value augmentation of the design work produced, the motivations, emotional judgements and belief systems at work that inform and drive the practice.

The chapter goes on to document the second cycle focused coding. The second cycle was the most important as it revealed relationships and showed meaning between the elemental and effective categories developed in the first cycle. Four salient concepts were identified from the second cycle. These are: *'Discipline, Science and Society', 'Satiric Design', 'Context and facilitation', 'Function, distribution and dissemination'* The chapter concludes by outlining how these concepts provide the empirical grounding for the conceptualisation, structuring and design of the taxonomy presented in chapter seven.

6.1 Transcription, edit and return

After the interviews were conducted, the audio recordings were transcribed verbatim to include all the spoken utterances. The analysis began with a discussion of the interviews presented in chapter five. As a means to capture the essence of the interview, a document was produced in which the transcripts were edited and supplemented with notes, reflections and illustration.[33] This exercise facilitated a close reading of the interview transcripts and helped to reduce the transcripts into a summary format. It identified initial themes present in the discussion. The interview transcripts and edited versions were returned to the participants for comment. This phase contributed to the process of dialogical reasoning between the researcher and the participant – directly addressing conditions outlined in the interpretive framework.

6.2 Inductive qualitative analysis

There is a wide range of literature that documents the underlying assumptions and procedures for analysing qualitative data. Many of these are associated with traditions such as grounded theory (Strauss & Corbin, 1998), phenomenology (Van Manen, 1997), discourse analysis (Potter & Wetherall, 1994), content analysis (Krippendorff K. , 2006) or narrative analysis (Leiblich, 1998). Some analytic approaches are generic and are not labelled within one of the specific traditions of qualitative research. The analytical approach used in this research is considered generic.

A code to theory model of inquiry was used in the analysis (see appendix c). An inventory of codes was generated from the transcripts, these were abstracted into a set of categories and further abstracted into concepts that illustrate how categories interrelate. This information was then used to develop the taxonomy. In Saldaña's terms, this process "transcends the reality of data and progress toward the thematic, conceptual and theoretical." (2009, p. 11) The processes of abstraction and generalisation satisfy the requirements set out in the interpretive framework.

[33]An example of this was published in proceedings at the DRS conference in Montréal 2010. See (Malpass, 2010)

6.3 First cycle descriptive coding: Analytical categories

Descriptive coding identified topics relating to the contexts engendered in the work . Values coding identified experiences and values of the designers. The descriptive coding method used is a form of elemental coding. The coding generated a basic inventory of the topics discussed in the interviews. A short word or phrase was used to summarise the topic of a segment of text from the interview transcript. A topic is what is talked about. For example, biotechnology, robotics, funding and dissemination were types of topics discussed. The value coding investigated the subjective qualities of the designers experience e.g. Emotional values and judgements by directly questioning those values. For example, questioning the designer's frustrations and dissatisfaction with the current state of industrial design.

The first step in the descriptive coding produced an inventory of topics.[34] The inventory was then organised thematically into higher-level categories:

1. Defining critical design
    a. Conceptual design
    b. Design fiction
    c. Speculative design
    d. Design for debate
    e. Discursive design

In some instances, themes warranted further sub-categorisation:

1. Designers focus
    a. Disciplinary
        i. Obsolescence
        ii. Consumption
        iii. Manufacture
    b. Science
        i. Synthetic Biology
        ii. Biotechnology
        iii. Robotics
    c. Socio-cultural
        i. Political Economy
        ii. Mental health
        iii. Dissident behaviours

[34] The transcripts were coded manually using Nvivo QDA software.

Thirteen categories were developed and are outlined below. Each category is presented with examples of the topics it contains and is supported with coded extracts from the transcripts. An analytical memo is used to summarise each category and outline its usefulness in the analysis.

6.3.1 Defining critical design

The coding revealed a range of terms used to describe critical design practice. Topics coded included: 'Conceptual design', 'Critical Design', 'Design fiction', 'Speculative design' and 'Design for Debate,' less frequently 'Discursive design', 'Experimental design' and 'Applied Art' were used.

> ***JA:*** *Some people are talking about discursive design, some people are talking about speculative design, obviously we've got critical design and we've got conceptual design and I think there is a couple more as well.*

The practice was placed in opposition to causal problem driven processes and positioned as a more relational form of design than conventional models of design[35]:

> ***AD****…we do talk about is this idea of conceptual design and design that's all about ideas. It's freed from let's say practical constraints and in that space critique is one possibility, debate is another, entertainment is another, asking what if is another.*

It was defined in relation to conceptual art:

> ***AD:*** *It's difficult because personally I'd see what we're doing is fundamentally applied art but its post Duchamp. You know when art becomes about ideas…*
>
> ***RB:*** *...it follows from that that you would choose to use art as a label for critical design because people take art more seriously intellectually. […] It's strategic or if possible, to strategically use the idea that it is art using design as a point of reference in order to make statements about design.*

The designers described the theoretical projects that aim to establish a 'definitive' understanding of the field. Activity aimed at developing the discourse and understanding in critical design practice was coded at 'developing definitions.'

---

[35] For a view of 'traditional' design processes see: Dubberly (2004). In this compendium of models 100 design processes are presented that are built on convergence and working towards a specific end.

The coding showed that within these definitions two types of activity emerge. These are seen as Critical and Speculative Design.

> ***JA:*** *[…] my work with robots is more Speculative Design than critical and we're just sort of unpacking the subtle differences between them at the moment and trying to bring a little more clarity between them and how they can be used.*

> ***TK:*** *[...] it's easier for me to supply my own terms and working definitions for speculative design, where as if I work out of the critical design label it just problamatises it massively.*

This category is useful because the range of terminology and definitions of practice provides evidence of the lack of congruency in how the practice is understood. This lack of congruency challenges the colloquial understanding of critical design practice; if there is not a definitive understanding within the community of practice it is difficult to establish understanding outside the practice. The identification of this category supports the intentions of this study to help clear the field of ambiguous understanding by defining key concepts in the practice. The identification of the two types of practice present in the discourse – critical and Speculative Design – suggests diverse and specific forms of address using critical practice.

6.3.2 Designers' focus

The descriptive coding revealed the contexts engendered in the designers' works i.e. the focus, commentary, critique or inquiry through design. The topics coded are not representative of all critical design practice. However, the coding illustrates the diversity in what the designers interviewed focus on through their practice. Topics coded included: 'Biotechnology', 'Synthetic biological futures', 'Robotics', 'Mental health', 'Political economy', 'Film', 'Visual culture', 'Sustainability', 'Obsolescence' and 'Furniture design'.

The designers' frequently described the use of product design to visualise and address scientific concerns:

> ***JA:*** *I'd been talking about Post-human futures: what happens when technology enters the body and so on and we started chatting about bioengineering and implants and so on. I can't remember how it happened but we just got on to this idea of it being in the tooth. The telephone being in the tooth and it really started from simple an angle as that.*

> ***TK:*** *Whereas the 'Vital signs' there are aspects in it that I am personally more interested in terms of the kind of digital stuff and how bodies are linked to technologies etc.*

The coding revealed where design is used to engage in ethical discourses surrounding biological engineering:

> ***FR:*** *So with all the ethics we got when we were doing the bio stuff we wanted to speak to ethicists about visualising this genetic world.*

> ***TK:*** *Then that was quite a nightmare to get ethical approval to get the cells from people. It dint go through when it was structured as a public engagement application but then Ian rewrote the whole thing.*

Just as some of the designers focus on the sciences, others use design to address more 'human orientated concerns', for example, inquiring into psychological issues. Objects are used to converse on issues of mental-health and anxiety:

> ***FR:*** *Making the hideaway pieces, one of the reasons we wanted to do that project was to talk to psychiatric nurses and talking about what your state of reality is.*

In other examples, design is used to explore and facilitate personal desires and fetish behaviours:

> ***NT:*** *The object allowed the people to engage in some kind of ritual that was completely their own, that was related, to some element within their psychology that needed to get out every now and then.*

The designers described how design is used to explore cultural concerns. For example, traits in visual culture:

> ***NT:*** *I'm a film junkie and I'm more and more starting to address how we read film. Very interested in how as a population we read film and how embedded, how fluent we are in understanding the technical elements of film.*

The coding revealed how design is used to address sustainability, obsolescence and consumption:

> ***RM:*** *We created a research project in which a range of examples were created first of all exploring the materiality of energy. The two main themes were the materiality of energy how it appears, how it's materialised, how it's made visible. Another other thing is how that materialisation and visualisation causes or induces reflection in use.*

> ***RB:*** *I would agree generally with that accept one of the things we are looking at is in a way that I think is different to other people is sustainability which is a bigger territory. The umbrella title of the original project was called Sustaining desire and the idea was its sort of looking inwards to project outwards again. So it's basically saying we need to start valuing the good things that we already have rather than just making more and more and just throwing them away and just making more and more of them. So Sustaining Desire becomes: lets actually focus on both the intellectual and the aesthetic marriage of things which are really good pieces of design and so you have to go inward i.e. you have to be introspective in terms of looking at what these objects really are and what they do, to remind people who have forgotten because actually they are so familiar.*

Three distinct themes emerged from the topics coded in this category. It made sense to group them into three subcategories. These subcategories were characterised by topics with a Disciplinary, Science and technological or a Socio-cultural focus:

As a sub category, 'Disciplinary focus' contains codes more familiar to 'traditional' design discourses:

> ***RB:*** *Well I think the first thing is that what it means is that the objects we produce are about making commentary or comment on design practice. […] those will be observations about particular issues associated with design itself. So it might be to do with sustainability, it might be to do with excessive obsolescence.*

Science and technological focus contains codes that address technological futures and developing science:

> ***FR:*** *There's a kind of geeky fascination with the potential of science to do something. So I think sometimes that's the starting point for us because within science and technology there is always a promise.*

Socio-cultural focus contains codes where design is used to address social, cultural and political concerns a means to question and challenge quotidian conditions:

> ***FR:*** *If we were talk to an economist on their terms it's going to kill us, but if we bring along some design proposals then, of an alternative welfare state, then they come alive and then the conversation comes off in a different way.*

The usefulness in this category is how it shows that critical designer address a range of concerns beyond 'critical design' in its colloquial understanding depicted as mounting a critique of technological issues.

The sub-categorisation shows how the topics can be grouped into three distinct types of address. This extends the discourse beyond critical and speculative practice to include examples that specifically address design issues through a disciplinary focus. The application of this category to structure the taxonomy is illustrated in the following chapter.

6.3.3 The function of critical design practice

The coding revealed perceptions relating to the concept of function in critical design practice. The range of topics coded at function included: 'Provocation', 'Debate', 'Public engagement', 'Democratisation of technology', 'Design as discourse', 'Conversation', 'Critical thinking', 'Commentary', 'Research through design' and 'Entertainment'.

Frequent reference was made to critical design as a democratic practice. The function to engage an audience in a discussion:

> ***MN:*** *It a much more, it's a kind of communal activity and it's where ideas are debated and discussed and have an equal footing for a longer period of time, they're moved through a conversation. And in many ways the work, for me critical design is a dialogue it's a visual dialogue about your ideas of design thinking.*

> ***TK:*** *Yeah well, those proposals were very clear in outputs. There was the question of public engagement whether it was the science museum whether it was café scientifique all these formats for delivery [...] I have very strong opinions about how you're letting people come across technologies that are not yet formed. Stuff that's emerging and doesn't have a certain direction to it. I think it's really important the way in which people encounter that so that they can get their heads around it and treat it creatively.*

In addition to debate, engagement and conversation, the coding revealed a more subjective function. Frequent reference was made to a form of practice used to develop personal understanding:

> ***AD:*** *I think it's kind of a contradiction again because we say that they're designs and it's accessible and so on but we are more interested in the expert conversations. […] using design to make these questions come alive and develop how we think about things..*

The function of critical design as design fiction and the opportunities this offers came through in the descriptions:

> *it's a fictional space and within the fictional space you can have critique and critical things but you can also have entertainment, provocation, commentary and so on.*

This category supports the earlier discussion about function presented in chapter four. It shows an understanding of function among the designers that extends beyond efficient and practical use. In this respect entertainment, provocation and commentary are framed as purposive functions. The usefulness in the category is how alongside design for debate, public engagement etc. it provides evidence that design is positioned as a subjective activity geared towards advancing personal understanding. This personal

and arguably indulgent role for design is somewhat omitted in the broader discourses on critical design practice.

6.3.4 Design methods in critical design practice

The coding provided insight into the methods used by the designers. Topics coded include 'Satire', 'Poetics', 'Juxtaposition' and 'Fiction'. 'Subversion of familiar design archetype', 'making strange', 'embedding narrative' and 'extrinsic narrative'. Considering the characteristics of the topics coded and categorised here, it made sense to group the topics into four subcategories, moving to a more generalised – and therefore useful – account in the formation of a taxonomy. The four subcategories contained in this category provide evidence of how critical design is done. Subcategories were developed by grouping topics relating to Satire, Ambiguity, Narrative and Design Principles.

The use of satire was frequently described as an important mechanism to deliver successful critique:

> **AD:** *I think the problem is that irony can be jokey and too simplistic and one-linerish. I think what we're interested in maybe more is satire.*

> **MN:** *Often the work is about people looking at objects afresh and it doesn't have to be serious and pondering. It's actually often quite witty and amusing. So it's getting people rather like comedy and being poetic about something, you get people to look at things in a very different way, you get them to look at things afresh.*

> **NT:** *…yeah it is dark, or it's interpreted often as being very dark, but hopefully there is a lot of humour in the work as well. That is what it's like: dark humour, black humour, it's unsettling. If I've done something right, it's partially unsettling and partially humorous.*

Ambiguity through the subversion of familiar design objects and how their function in everyday use, was seen as an important mechanism to engage the user in critical design:

> **FR:** *…there is a play between how much the aesthetic is brought in for it to be--. It's not homemade, it feels like it could be made in industry but it's not made by industry. There is a balance between believing it's real and not quite believing it's real if that makes sense? […] We like the idea that it's ambiguous and you're not sure if we're really anti or for and therefore you have to make up your own mind.*

> **RB:** *We're making chairs and reassembling them, we're using objects that are very familiar but we're making them unfamiliar.*

> **RB:** *Design poetics is used in the same way as literary poetics and poetry, in that something doesn't have to make literal sense it has to make poetic sense. What does that mean? It means that, in literary poetry you can put some words together that wouldn't necessarily make a narrative sense but make a different kind of meaning. So for example, if a talked about a loud voice that would be a normal literary statement but if I talked about a pale*

green voice or a dark blue voice that would be a more poetic description of that. So it's to do with putting words together that make something resonate in a different way. So we would talk about visual poetics in the same way. You put together something that creates a contradiction, creates a paradox, and creates some form of visual resonance, which is different to what you would expect but also throws light on the object that you are dealing with.

The importance of designing 'Narrative' was frequently referenced. Often, the narrative was said to be as important as the design of the object itself. Two types of narrative were revealed, firstly an extrinsic narrative that used external means to position the object in context:

FR: *But also, I think the narrative of which we position something in. It's not just the object. We craft the narrative and the context as well that's part of the process of the design.*

Secondly, a more laconic narrative where the story being told is embedded in the object itself:

RB: *…critical design for us is that we're using objects instead of using text. So we're using objects to make comments about the culture of design through the objects themselves. We are interested in what we call embedded visual narrative. Which means that what we are looking for is having the object speak for itself or declare its intentions directly. The idea is that we're trying to use a visual narrative and therefore that's why we say it's embedded. The story ideally is embedded in the object rather than how it exists as a separate narrative. That's the difference between what other critical designers would be doing and what we would be doing. We are hoping that you are able to directly read what the object is about.*

The coding revealed how the designers described honouring design practices, principles and methods:

RB: *…the objects themselves don't necessarily need to be functional practical objects but they need to refer to functional practical objects or the culture of design in order to make comment about it.*

This category provides insight into the methods used by the designers. Storytelling and fiction are important. Critique is important. Satire bridges these salient elements of the practice. Satire engages through methods of subversion and storytelling and has a close relationship to criticism – this is detailed later. Underpinning the discussion on the use of satire was the importance of honouring design principles. There is a requirement to pay attention to manufacture, form and making and relating the objects back to quotidian conditions through an understandable design language.

6.3.5 Concepts grounding practice

The descriptive coding identified some theoretical perspectives that inform the designers practice. Topics coded and grouped into this category include 'Substantive

theories of technology', 'Critical theory', 'Science and Technology Studies', 'Phenomenology', 'Reflective practice' and 'Practice based research'.

Critical and substantive theories of technology were frequently described as being of interest:

> ***JA:*** *The underlying thinking and reading that I have been influenced by throughout the years is probably philosophers of technology. So the obvious Heidegger and Marshal McLuhan, but then more recently Langdon Winner, Whale and the Reactor. […] so really I suppose the philosophy of technology is really inspirational and I think an awful lot about what they are writing about. I suppose how I would like my work to be operating is asking similar questions and philosophising about similar things but rather than using the language of writing I'm using the language of products which is probably less poignant, but it's easier to misinterpret, and it's less targeted, and it's less in detail, but it's much easier to disseminate, it's much more appealing to a broader audience.*

Reference was made to material culture discourses and exploiting phenomenological understandings of objects in order to inquire or pass comment through designed object:

> ***RM:*** *That came from a phenomenological interest how that notion of materiality and interacting with things creates an opportunity for awareness and for knowledge. That whole phenomenological contact with the real is the way that you understand things in the world. Not a cognitive notion but a phenomenal notion.*

In describing their theoretical interests, the coding showed how the designers perceived the danger of critical design being used as an illustration of theory.

> ***RM:*** *If you look at for example product semantics there is a lot of very literal translation of a theory into a practice in some way. I am not interested in that but rather understanding what working with theories does for practice what that might also take a different set of concerns in this situation.*

The coding revealed how STS is informing practice and used to guide inquiries into the relationships between the object and users in their social contexts.

> ***TK:*** *I'm trying to unpack a little bit what I mean by Speculative Design and that all links to these conversations about critical design. Then also, how I think that relates to public engagement and what public engagement actually is. That's what the really interesting bit at the moment is; using STS to unpack an account of public engagement.*
>
> *[…] there is a quite an interesting paper on this by Alex Willkie and Matt Ward it's called made in criticalland and its talking about replacing if you like the cannon of what design students look at. Rather continental philosophy and all that, there is a case that it could be driven by STS and other approaches, other kind of practices.*

The coding showed frequent reference to how design is being positioned as a form of critical thought:

> ***RM:*** *I am not so interested if we call that concept design or even if they ever called it that, but instead saying that this is one way in which critical practice can operate to make that break from the here and now and a certain set of defined conditions and circumstances to project something else. Critical design maybe doing that through critical theory and also differentiating critical theory from the Frankfurt school too. This much more fluid and continually critical perhaps anti-foundational notions of critical theory today. Where you don't take this purely oppositional stance, this alienation discussion that has been actually very present both in the critical architecture in the 1980s and also in critical design as it was formulated ten years ago. But you look at a more fluid notion of asking questions of what for and for whom? So that it's not just only opposing a system but you are actually looking at specifying what are the values in place what is left out whose interests are served*

This category provides evidence of the range of theoretical bases that inform the practice. It shows a relationship between critical design and the social sciences. It shows that amongst the designers interviewed a theoretical grounding of the practice is important. However, it shows that the intellectual and ideological foundation of the designers' practice is grounded in a broad intellectual base, but also from a more reflective understanding, that is not as simply described through discourses on emancipation but guided through processes of making i.e. practice led research grounded in reflexivity and action research. The category therefore advances the understanding of critical design practice as linked to critical theory, as it is understood in the Marxist or Frankfurt traditions. It suggests that the theoretical grounding is as broad as the focus of critique or inquiry.

6.3.6 Contexts of operation

The descriptive coding showed where critical design is done; its contexts of operation. Topics coded include 'Pedagogy', 'Research', 'Self-initiated studio projects' and 'Para-academic work'.

The relationship between critical practice and education was frequently referenced.

> ***TK:*** *[…] so this idea of criticality as it relates to education is really interesting. I think it always goes back to that, there are always the exhibitions and the things but it's been driven I think through pedagogy. Through students interests and passion for that. It's the perfect thing to be doing when you haven't got a job.*

> ***NT:*** *But I think through what is essentially a grass roots movement that is the academic world this term has now become something that exists within the gallery system, exhibitions Tony and Fiona were part of a show that was called critical design. And so as a result it's become something that within this industry within the culture of design, in both as education as practice it's something that is now recognised.*

MN: …we're told you're not really a designer unless you're providing a service. Well my service I am providing a service it's just not got a client in a traditional sense. The client is the educational system… it's design thinking.

The coding showed how the designers often work by self-initiated agendas. The work is therefore free from the demands of the client and not constrained by market practicalities. These projects are facilitated by experimental and conceptual studio practice or facilitated by educational institutions.

MN: It's also to do with the idea that you are not working for a client. You are working to a design agenda rather than a client or service agenda.

The coding showed that there is occasionally a commercial interest in critical design practice. Projects are carried out in a para-academic context. The work is commissioned, as a means for companies to explore the potential of emerging science and technology or challenge social barriers to the uptake of new technologies. The projects sit at the interface of the academy and industry where art and design schools work with industrial partners. This is evidenced by Augers descriptions of work done as part of Philips design probes programme and Mazé's work on Static and Switch with Swedish energy providers.

This usefully identifies where critical design is done. For the most part, it is positioned as an academic pursuit and carried out in an educational context, driven by personal interests and curriculum requirements. Occasionally para-academic bodies offered opportunities and funding frameworks that facilitate the practice. This challenges the view that critical design operates solely as a non-commercial form of practice. However for the most part the practice is carried out through self-initiated, self-funded, studio practice.

6.3.7 Contexts of dissemination

The descriptive coding identified different contexts where 'critical' design is disseminated. Topics coded and grouped in this category include, 'Gallery dissemination', 'Exhibitions', 'Mass-media dissemination' and 'Research publication'.

Reference was made to how critical design disseminates through exhibitions and the mass media. These channels reach broader audiences than academic channels.

JA: Let's break out of the ivory towers of academia and take this thinking about technology to a much broader public audience and let's do that trough products and artefacts that people could recognise and maybe then make value judgements on them. […] I'm trying to tap into the current mainstream ideology or the belief systems the

desires the fashionable, what is a trend at the moment both in terms of form and function. And if you get all of those things right, this is the tricky bit, it will disseminate, it will get out there, people will want to publish it, they will want to talk about it. And you've got to have an image to represent the object that is publishable and it's kind of strategies that I am very interested in and have been working on for eight to ten years. Get them all right and the work will have a life of its own. So when you were talking earlier on about where dissemination happens, we do use galleries and so on but very, very, much at the forefront is using the media taking advantage of the breadth and the depth and the speed of the media. And using their methods and their systems, taking advantage of that to spread these things very quickly to a wider audience as possible.

A common perception was the need to reconsider how the practice operates and disseminates.

JA: *In a more academic context validation there are set methods there are set ways of validation your work such as getting it published getting papers written at conferences and so on. These have been to a point been brought into the critical design world. A lot of the early CRD days' people would be writing papers and going to conferences and so on. I don't think it's the correct way of doing it at this point. So what I'm looking at are alternative ways of validation because you just can't map straight over I think that it's a very different approach to dealing with technology. So previous ways of doing that aren't necessarily going to work with this system. I think it's critical that we start exploring how you can judge the success of a critical design project.*

The category is useful as it catalogues the different platforms of dissemination. It is important to note that the highest frequency of the codes was in reference to gallery dissemination or other meta-cultural contexts including dissemination through galleries, through mass-media mediums i.e. magazines and blogs. Topics coded at research publications were made but less frequently.

6.3.8 Critical design as design research

The coding revealed how critical design is positioned as a form of research. Topics coded included 'Research through design' 'Reflective practice' and 'Practice led research'. The design activity was frequently described as research. However, the coding revealed unease at how design might function as research in traditional academic models and a resistance to stereotypical categorisation of the practice as design research,

6.3.9 Sustaining critical design practice

Frequent reference was made to project funding. Topics coded in this category included 'Funding processes', 'Funding bodies.' The descriptive coding identified 'Challenges to funding'.

TK: *… Biojewellery was funded through the EPSRC, through their public engagement program […] I guess that was a crucial moment to get that funding for it and then work out how the hell we were going to do it. It*

didn't go through when it was structured as a public engagement application but then Ian rewrote the whole thing and took it to another ethical board and wrote about it as an experiment, which it was.

AD: *[…]the designs happen fast and usually it takes ages to get there, but happens very quickly and then takes ages to implement because we're always looking for funds or opportunities.*

NT: *It was a project I was looking to get funding for, getting funding for and imagining already that there was a film attached to it but I had to first build these objects and then find additional funding to get the film afterwards.. […] I had to get another round of funding and obviously a whole other system in place to produce a film.*

There is emphasis on how the practice is sustained by arts council and research funding. This provides insight into one of the reasons that examples outside of the institutional context are limited. Quite simply institutional links opens access to funding.

6.4 First cycle values coding: effective categories

The values coding assessed the designers' values, attitudes and beliefs. The transcripts were coded at a 'value', where the designers attributed importance to something, an 'attitude', the way a designer thought, felt or reflected on something and a 'belief', where the designers expressed opinion and prejudice.

6.4.1 Values

The coding revealed the importance attributed to the processes, methods and principles of design. This was illustrated by how the designers described the use of a design language exemplified by how objects produced in critical design practice should always relate back to a quotidian understanding of objects.

In critical design practice, the designers value the same rules as in commercial projects. There is attention to form and contexts of use. The only difference between critical design and mainstream design – in terms of the production of objects – is that the commercial element is removed in critical design practice:

JA: *So context, circumstances are absolutely everything. And I think that's something that designers by the very nature of what we do, we we're thinking about where our products will exist in the real would and that will influence hugely how we develop them. And that's for me the criteria and the rules I bring in when I start doing speculative things. The rules should be exactly the same.*

MN: *By the nature of it because you're designers everything you do you try and rationalise as a designer would you put things together in a rational way using the principles you've grown up with in a sense economy of means and you use materials as they need to be used. So in a sense that's what it's also about. It's expressing those traditions..*

The importance attributed to design principles was illustrated by how the designers assert the work as design. The coding revealed how design methods and production of design work are positioned as a system of critical thought. Rather than using other mediums, the designers value reflective practice and the processes of designing to articulate a position and develop understanding through making and dissemination:

> ***AD:*** *So all the projects I get excited about are from a dissatisfaction of the world as it is, but somehow I wanted to connect back. If things ever floated off I think I'd be deeply unhappy if I really became disconnected. There seems to be some sort of tension where, we're not happy with the way the world is, feeling you can't do much to change it, but still wanting to offer up ideas, thoughts and possibilities knowing that they are highly unlikely to be ever implemented.*

The coding revealed how the designers assert the importance of humour in the practice. It is the instrumental use of satire and how it links to criticism, which forms the foundation of critical design practice. Design and satire are integrated to create a rhetorical language, through strangely familiar form and ambiguity that encourages user engagement by forcing a dilemma of interpretation within the user.

6.4.2 Attitudes

The coding revealed how the practice is born out of frustration and dissatisfaction. This primarily resides with design in service to capitalism, feeding superficial replication in a culture of consumption and a lack of intellectual content within product design. Collectively the designers do not see product design as a service or even as a profession. It is viewed as a discipline that requires a thoughtful and inquisitive component. In this respect, critical practice is seen to advance the discipline:

> **RB:** *Well design's not very ideological anymore is it? It's very commercially orientated [...] I think one of the things that initially motivated me was a kind of frustration with what I would call an endless cycle of the same neo-modernist work and also a kind of frustration with also things like the way that postmodernism and various forms of contemporary design simply seem to be fairly stylistic activities with very little intellectual content.*

> ***MN:*** *Fundamentally, I believe design can be a powerful tool that doesn't need to be completely dismantled; it just needs to be paired back to what it's capable of doing.*

The coding revealed a frustration with utopian agendas in developing science and technology. The designers hold a substantive view of how new science and technology makes its way into everyday life through product design.

Amidst attitudes of dissatisfaction and frustration, there is a collective refusal to abandon product design. The coding revealed the need to reassess contemporary

practice. In some cases, this comes after years of practice. In others the designers enter the field to articulate their dissatisfaction of mainstream product design. The coding revealed how any rejection of design principles should be constructive and done by utilizing design method to afford the appropriate critique. Others are politically motivated; others are more interested in finding a way of articulating ideas in visual or formal ways; each of them is just as interested in the ideas that inform their designs, as they are in the finished product. This category is useful in how it shows two distinct rationales. Firstly, a frustration with product design limited to servicing consumption, resulting in a reaction that aims to advance its social and cultural agency. Secondly, the application of product design to address science and technological concerns.

6.4.3 Beliefs

The practice offers a criticism from within design practice. There is a belief that function can be extended into provocative realms and that design has the potential to open up new avenues of discourse.

> ***RB:*** *…we make things because we see objects as powerful communicator […] a way of summarising is that the design historian critiques from the outside and what we're trying to do is to critique from the inside.*

There is a belief that design can constitute a public around issues of developing science and technology and that it offers a democratic way to engage a public in these discourses.

> ***TK:*** *I have very strong opinions about how you're letting people come across technologies that are not yet formed. Stuff that's emerging and doesn't have a certain direction to it. I think it's really important the way in which people encounter that so that they can get their heads around it and treat it creatively. Underlying it is this real interest in how you handle encourage those modes of encounter.*

The coding reveals a belief that critical design can be understood and judged through reflective practice. There is a common suspicion of traditional academic dissemination. Even though critical design has its roots in an academic tradition and for the most part still operating in academic or institutional contexts, it is distributed and consumed through mass media and gallery dissemination.

6.5 Second cycle coding: Focused coding

Focused coding was used to synthesise the findings from the first cycle. The coding identified salient concepts from the relationships between the first cycle categories. The second cycle coding was the most significant stage in the coding process. It identified the most salient concepts 'in the data corpus' and required decisions about which codes in the first cycle made the most analytical sense. It focused on the inventory of descriptive codes and value codes to identify higher-level concepts and relationships between the categories. The four concepts presented below describe the most salient aspects of critical design practice identified from the designers' interviews.

6.5.1 Engendered contexts: Discipline, Science and Society

Three distinct type of address emerged from the initial coding – a focus on: discipline, science and society. After reviewing the categories, I feel that 'Designers Focus' developed through the initial categorisation and further sub-categorisation seems to hold when considering salience. The 'Designers Focus' has clear connections to 'Values' and 'Concepts that ground practice'. Focus on disciplinary concerns is underpinned by dissatisfaction with contemporary design practice. It is grounded in reflective practice. The focus on science and technological concerns is underpinned by the belief that product design offers a means to question technological futures and social conditions affected by scientific advances. This is grounded in substantive theories of technology. The focus on socio-cultural concerns positions product design as a form of culture jamming underpinned by critical theory. In each case, the practice is motivated by a shared impulse to reframe the circumstances surrounding contemporary product design by using intuitive modes of investigation, which probe the boundaries of the discipline. It is embedded with personal values and positioned as a form of critical thinking that delivers criticism from within product design practice focusing either inward at the discipline or outward towards broader social and scientific concerns.

6.5.2 Satiric Design

After reviewing the categories the initial category of 'design methods' holds up. Focusing the coding reveals the importance of satire in the discourse and practice. The subcategories constructed in the first cycle identify methods used to establish satirical narratives. Satire is afforded using methods of ambiguity and subverting contexts of use. Product design was positioned as a form of storytelling where constructing a narrative in and around the objects is as important as designing the objects itself. It is evident in

the interviews how literary mechanisms are used in the design work, narrative, satire, poetics and juxtaposition. Such mechanisms are integrated with design principles and traditional practice relating to making and the production of objects. The satiric response is delivered through extrinsic or laconic narrative. The narrative affords the projection of objects into everyday life through a material form of rhetoric establishing a critique built on tension, contradiction and juxtaposition. The work however bereft of essentialist notions of function must always reference actual use. This connects to the values coding and the shared 'attitude' among the designers that an understanding of design and its effects is essential for critical design to operate successfully; critique is afforded through the subversion of such conditions. Knowledge of design process, materials and form provides a basis for presenting alternatives and while these tendencies challenge the boundaries that might traditionally define product design, it is the subversion of familiar designed objects that makes design a perfect medium not just for commentary, but for developing constructive counter proposals and imagining alternative realities. Satiric Design, which denotes the integration of design principles and satirical form, is therefore identified as a salient concept in critical design practice.

6.5.3 Context and facilitation

After reviewing the categories, 'Sustaining critical design practice', 'Critical design as research', and 'Contexts of operation' were brought together to form the concept of 'Context and facilitation'. This concept illustrates salience relating to where critical design operates and by extension how it is facilitated. The practice is motivated to challenge design thinking. This restricts where it is carried out, as it is not easy to do critical design in an industrial or commercial context. The academic context therefore facilitates the practice and the majority of examples of critical design are either educational projects or projects carried out and framed as research. The educational context provides the room for exploratory and experimental conceptual design because it is not tied to the constraints that industrial or professional design practice imposes.

The coding revealed a close link between the development of critical design and pedagogic activities of the designers. The paradox is that because of tuition fees and the economic drives within the UK education system the students pay to practice in a non-commercial critical context. Reference was made to projects that are carried out loosely connected to industrial practice in the para-academic contexts. Still these projects are

commissioned as research and in the examples coded in the interviews, these critical industry projects are outsourced to the academy.

This connects to 'sustaining critical design practice' and the consistent reference to funding practice. Even though it operates none commercially, there is a need to fund the projects. This goes some way to explain why critical design is carried out in an academic context. Firstly, the academy allows the freedom required. It also provides access to funding streams that independent designers and studios will not have access to.

6.5.4 Function, distribution and dissemination

After reviewing the categories the concept 'Function distribution and dissemination' was generated incorporating, 'Definitions of critical design' and 'Function of critical design practice' and Contexts of dissemination'. The most obvious reason for this is because of how the designers designate the function of the practice i.e. critique, speculation, experimentation or to provoke debate. 'Contexts of dissemination' has a connection to these categories because the function of the practice alludes towards engagement, through channels of dissemination. The success of the projects is judged by how well it disseminates either in a meta-cultural; gallery or exhibition context, or in the academic context through exhibition, workshops, seminars, conferences etc. Even when the practice was positioned as a subjective and personal form of inquiry, the objects are disseminated and presented to a given public. I would argue therefore that the most salient function of critical design is to engage an audience.[36]

In engaging an audience, critical design practice functions to use the propositional and projective potentials of design to change behaviours and aspirations of individuals and industry. While the designers believe in the qualities of product design as inquiry or as a medium to pass social comment, it is build on the assumption that the work produced is understood by a larger public and is not reserved for a limited audience. The 'critical' designers assert that the work produced offers compelling reflections of existing practices, various social ailments and commentary on aspects of the world.

[36] How these forms of engagement occur, vary from project to project. See: Kerridge (2012) and DiSalvo (2009) for an account on public engagement through Critical and Speculative design.

This is important, yet problematic. Despite democratic and inclusive intentions, critical design has a particular community in which it is legible. One has to be prepared to 'read' these objects as such, which requires a particular critical eye. This is something either learned or developed and a skill that is not particularly widespread. Therefore in a much more quotidian context than a museum, gallery, some critical design objects will appear as nonsense – something that does not get things done or does not do as one expects. Sometimes that moment forces reflection. However, in the real world there is always the danger that these things just get in the way and are dismissed and forgotten.

6.6 Conclusion

This chapter has presented a structured analysis of the interviews to identify salient concepts in the discourse on critical design. The first cycle provided evidence of how critical design is defined and understood.

A clear outcome of the first cycle coding revealed how the designers clearly differentiate Speculative Design from Critical Design practices. The analysis revealed how the designers interviewed perceive Speculative design practice as having developed as a form of practice from a tradition of Critical Design.

The most useful thing to come from the first cycle was how it illustrated the range of concerns addressed through the designers practice. The range of concerns illustrates diversity in the type of topics the designers choose to address through their practice.

The analysis shows how the range of topics can be clearly categorised into three areas of focus Discipline, Science-technology and Socio-cultural.

The analysis shows the methods used by the designers. It showed how traditional design principles are honored and supplemented with mechanisms of satire and ambiguity. These engage the user and to establish forms of critique and inquiry through product design.

The analysis shows the designers' interpretations of function of critical design practice; each presented a view of function that advanced essentialist understanding.

The analysis shows where critical design is carried out, primarily from within an academic context. Less frequently there are examples of design work that have a relationship to commercial practice.

The coding identified where the designers work disseminates notably through meta-cultural channels i.e. the gallery. It also showed the pragmatic side to the practice i.e. how requires funding and sustaining and revealed an element of entrepreneurialism in the designer's approaches.

The values coding suggests what drives the designers practice. The practice is notably born out of a frustration with contemporary use and expectations of product design practice i.e. the use of product design to deliver new science and technology without question, or a frustration with its typical role of styling to fuel consumption. The designers see the best way to offer a critique or to address the frustration is to use their practice as a subversive language. In this respect the designers practice takes on an agonistic function. This is supported by how the designers continue to frame and assert the critical design work as design.

Salience was identified by exploring in more detail how coding in the first cycle overlapped through focused coding. The focused coding supported the categorisation relating to the designers focus the three types of address. The coding illustrated how the three types of address were underpinned by the 'concepts grounding practice' and the designers' values.

Engendered contexts: discipline, science and society. The findings here pointed to *what* the designers address through design. This concept provided grounds to subcategorise critical design practice into three types of address, Disciplinary, Science technology and Socio-cultural.

Satiric design was identified as a salient concept. It is useful because it addresses questions about *how* critical design is done. Critical design practice functions through the marriage of design principles and satire. This was underpinned by the values coding, in that the designers value and a respect design tradition, principles, techniques and in short, they honour these principles in their practice.

Function distribution and dissemination was identified as salient in the discourse. As a concept, it provides insight into questions of *why* the designers practice. The function of critical design practice was identified as, 'to challenge', 'debate' and 'inquire' through design. These functions of critical design practice can be framed as dissemination in that the work needs to be disseminated to challenge and audience, to initiate debate and engage an audience.

Context and facilitation was identified as salient in the discourse. As a concept, it provides insight into questions of *where* critical design is done. Academic design research, the gallery system and various studio practices were identified. In this, the findings identified how funding came through in the discourse. The pragmatics of sustaining a non-commercial practice by operating in an academic or educational context. It also revealed how the practice is closely linked to pedagogic activity.

Through inductive reasoning, this chapter has provided evidence of salience in the designers' interviews. The material identified here goes some way to answer the research questions. It illustrates what the designer do, where the practice operates how the designers practice i.e. the methods used.

The most important aspect of the finding presented in this chapter is how it identifies what a taxonomy of practice should address and the concepts that a taxonomy developed from these findings should include.

This chapter provides the empirical evidence to build and structure a taxonomy of practice. In the following chapter, the four salient concepts are tempered through a process of deductive reasoning and hermeneutic interpretation to deliver the taxonomy of practice in a written and visual form. The relationship between the analysis documented in this chapter and the categories developed in the taxonomy is summarised in appendix d.

Chapter seven

Towards a taxonomy of critical practice in product design

7 Towards a taxonomy of critical practice in product design

This chapter presents the main contribution of this research. It proposes a *Taxonomy of critical practice in product design*. It begins by outlining how the taxonomy developed. The chapter goes on to define three categories of practice that are interpreted to characterise critical practice in product design. These are *Associative, Speculative* and *Critical design*. The descriptions of these are informed by the contextual review, participant interviews and analysis. The chapter outlines the methods of classification that characterise the three practices. They are characterised by different uses of *Satire, Form of Narrative*, and *Object Rationality*. A theoretical account of each is outlined. A visual model of the taxonomy is presented.

Associative, Speculative and *Critical design* are structured in the taxonomy using *Satire, Forms of Narrative and Object Rationality*. To illustrate the characteristics inherent in each of the practices, examples are presented and discussed. The chapter concludes by integrating these examples into a visual model. This illustrates the taxonomy's use as apparatus to map critical design projects, compare projects and show trajectories of practice. The taxonomy in its written and visual components provides a framework to discuss critical design practice.

7.1 Developing the taxonomy

The taxonomy developed in four phases. The first phase was to determine the domain and scope of the field of critical design practice. This is established through the extensive contextual discussion presented in chapters two, three and four. The second phase involved reviewing authorities in the field. This was also established through the contextual review but was advanced in the interviews presented in chapter five. The third phase was to extract concepts from the interviews and identify salience in the discourse. This is evident in the analysis presented in chapter six. The fourth phase is outlined in this chapter and incorporates these concepts into a taxonomic model.

Before discussing how the concepts generated from the analysis ground the taxonomic categories and classifications, it is important to outline how the taxonomy developed and present the various iterations that have informed the study.

The idea of developing a taxonomy of practice emerged early in the project. A simple categorisation of practice was developed to understand designers' activity. This was done by collecting and surveying examples of design work. The process began by

grouping designers whose work appeared similar. This initial sorting was based on the type of topic addressed e.g. categorising work with a focus on technological concerns as 'technology,' or societal concerns as 'social engineering/innovation'.

The grouping was based on a tacit understanding. At this early stage, the taxonomy was used to understand and reflect on design examples. Through a discussion with peers and supervisors it emerged that developing a taxonomy of practice might provide a useful contribution to the design studies discourse on critical design. The research design was orientated towards developing a model that represented the field. Rather than just cataloguing examples, the taxonomy would be developed from engaging with designers in a discussion about practice and values. A working tool would be produced.

The literature on critical design provided initial thematic categories of practice. One was concerned with futures, initially described as Concept design, one with critique and social comment described as Critical design, and one focusing on design concerns, e.g. sustainability and production, which was described as Conceptual design. These were structured into a dendritic diagram shown below in Figure 7.1. The practices were framed as subversive, speculative or functioning both subversively and speculatively. This initial categorisation was published as a position paper and presented at various workshops and conferences (Malpass, 2009).

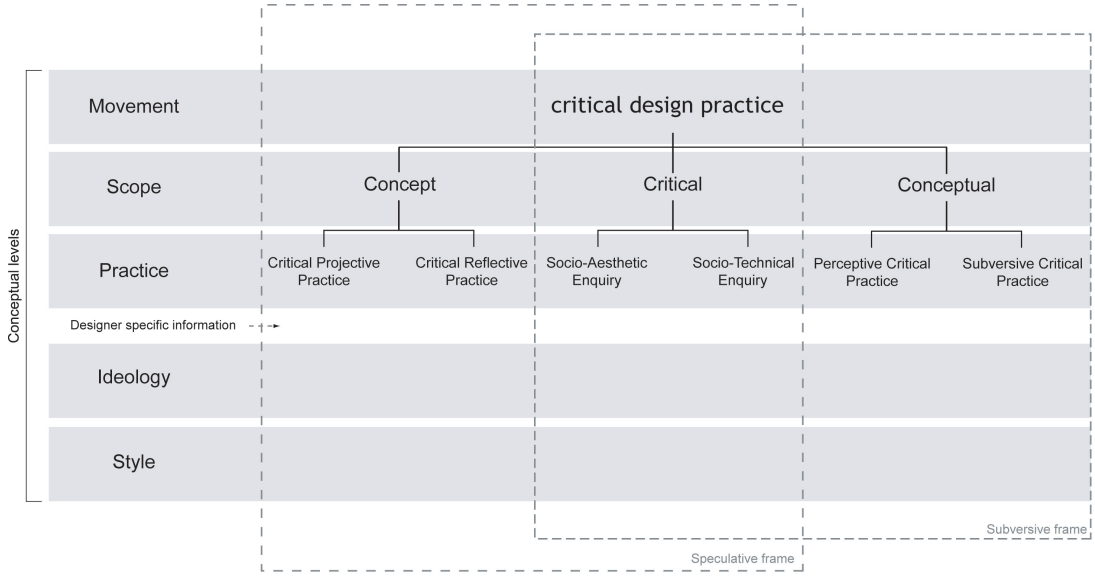


Figure 7.1 Early version taxonomy. Structured dendritically with speculative and subversive frames overlaid. In these early models, the practice was positioned as a design movement driven by ideologies and values.

As the project progressed, the categorisation changed. 'Concept design' traced a heritage from world fairs and futures. However, 'Concept design' as it was initially conceived did not go as far as to embody the critical attitude in the practice and in light of the interview analysis, it was reconceptualised as 'Speculative design'. Speculative Design represents the latest field of critical design practice. Its prominence as a practice has developed in parallel to this study. At the start of the project in 2007 there was a limited discourse surrounding Speculative design. Over the past five years, Speculative Design has built on methods of future forecasting, horizon scanning that my initial conceptualisation of 'concept design' embodied. These methods are integrated with the critical attitude found in critical design. The taxonomy was redesigned as shown in Figure 7.2.

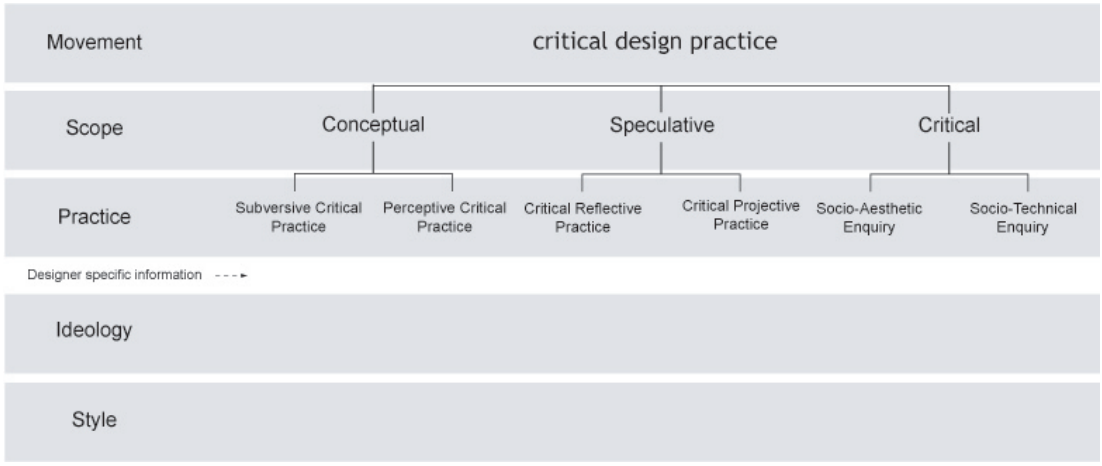


Figure 7.2 Revised version of the taxonomy. The speculative frame had been reconsidered and Speculative Design presented as a category of practice.

In the early versions of the taxonomy 'Conceptual design' was designated a category of practice. The use of 'conceptual' was in reference to conceptual art and the type of practice typified by Italian radical design, which as chapter two shows, draws on Dada, Situationist and Arte Povera methods. As the research advanced through the analysis, the use of 'Conceptual design' as a category of practice was reworked as *Associative Design* for two reasons.

Firstly, the literature and interviews showed that critical design practice is essentially about ideas; design is positioned as a form of discourse. Considering this, all the examples of work discussed as critical design practice through this thesis operate in a conceptual way.

Secondly, 'Conceptual design' has a long and varied history. It is a loaded term in design discourses, thinking and practice. Considering Critical and Speculative Design are both types of conceptual design, using the term 'conceptual' again to designate another subcategory of practice created confusion.

As the project progressed the importance of familiarity and the subversion of archetypical objects emerged in reference to the meaning I had ascribed to 'Conceptual design'. Designers such as Ball and Naylor's critique are dependent on the associations the user makes with the object. In light of this 'Conceptual design' was reconceptualised as *Associative Design.*

At this stage, the taxonomy now looked like Figure 7.2. It still required work to structure it to be used as a theoretical tool to map and analyse the field. The next stage was to design the taxonomy. This part of the project is discussed later in the chapter. First, it is important to understand what is represented in it. With this in mind, attention is now turned to the categories of practice. The following sections define *Associative*, *Speculative* and *Critical Design* as three distinct types of critical design practice and the methods of classification that characterise these three fields of practice.

7.2 Categories of critical design practice

The contextual review and the analysis provide evidence for three distinct types of critical design practice I term these *Associative Design, Speculative Design* and *Critical design.* Associative Design emerged from designer maker traditions and draws on mechanisms of subversion and experimentation in conceptual art. Critical design emerged from developments in HCI and the turn to Interaction design that challenged convention in developing human object interaction. Critical design had deterritorialising effects and moved the type of critique that Associative Design offered into contexts of science, technology and psychology and society. Speculative Design developed from Critical Design and specifically focuses on science and technology establishing and projecting scenarios of use which in the social anthropologist Paul Rabinow's terms makes visible what is emerging, by both slowing down the present and speeding us up to that present's future. (Hunt, 2011, p. 44). In the first case, the focus is typically product design, the second is concerned with reassessing design, the third looks beyond design exploring it applications in the field of science and technology. Each of these can be described as having critical characteristics as each challenge the essentialist view that product design needs to be grounded in need, efficient use and technical function.

These forms of practice are experimental, exploratory, provocative, discursive and even fictional. They question governing mentalities in the discipline and beyond.

7.2.1 Associative Design

Associative Design primarily focuses on disciplinary content. It subverts expectations of the ordinary and the everyday. With an embedded narrative, objects of associative design act as a critical medium playfully reflecting on cultural meaning, visualising issues pertinent to design practice today. It is a laconic form of design practice leaning towards artistic speculation rather than design for production and offering a poetic inquisition of the everyday. Experimentation with form is seen as the main research method. Ideas are subjected to critical processes of refutation. The aim of this approach is to present means for both designers and users to rethink dominant traditions and values in designed objects and their environment.

Associative Design is based on conventional association and understanding of objects. The design works through the subversion of the object or its context of use. Its objects are often reliant on a user's familiarity with form and design language. It is in the subversion of this understanding that the critical move is established and the user is prompted to question the object. It challenges ideas, orthodox traditions and the user by playfully subverting associations, hence, 'Associative'. Associative Design remains rooted in the everyday, relating to the conceptual domain of art but also to everyday conventions of use. It challenges embedded assumptions of products, making use of conventional disciplinary frames to assert and subvert norms.

Associative Design works through what Gaver, Beaver and Benford (2003) have outlined as ambiguity of context. The critical narrative is embedded into the object form – typically familiar archetypes. Therefore, the practice is dominated by furniture design. Typically the chairs, tables and lighting that characterise Associative Design means that its objects are 'more-rational' than those in Speculative and Critical design.

In Associative Design, designers employ a straightforward attitude to materials, an inventive approach to fabrication processes and methods, and typically a resistance to product styling. Methods of cut up, context transfer and hybridity (Scholz in. Brandes, Stich, & Wender, 2009, p. 41) are used to intervene in concepts and behaviours engaged in use. Latent humour and dry wit characterises the objects. It operates through a type of Horatian satire where methods of burlesque and parody is used to engage the user.

7.2.2 Speculative Design

Speculative Design operates in an ambivalent space between emerging science and material culture. It is concerned with the projection of socio-technical trends, developing scenarios of product roles in new use contexts. It is linked to futures, scenario building and techno-scientific research. It is characterised by its critical investigation of advances in science and technology. It aims to broaden the contexts and applications of work being carried out in laboratories and show them in everyday contexts.

Speculative Design takes a substantive view of technology. Rather than presenting utopic or dystopic visions, speculative designs pose challenging statements that attempt to explore ethical and societal implications of new science and the role product design plays in delivering it. It considers Biotechnology, Nanotechnology, Synthetic biology, and Robotics as falling within design's remits.

In speculative design, the designers collaborate with external disciplines. Typically, the designers work with scientific practices, materials, concepts and scientists themselves. Scientific instruments or materials – petri dish, tissue culture, MRI, thermal imaging – becomes part of the work. The results generated in scientific practice are taken up in the design work, and in some examples, the process of doing science itself has figured as the design process. The aim is to make scientific theories and the cultural implications of science perceptible in different ways. The practice questions scientific and social theories and reflects on the implications of design decisions made today and how they may proceed into the future. Speculative Design encourages the user to reconsider how the present is futuring and how we might potentiality have the chance to reconfigure the future.

Therefore, it advocates a democratic and open discussion into how science and technology developed and is directed. It serves as an alternative to existing strategies by channelling research findings through material objects. As a result, they express knowledge through form and by interaction with the work. Rather than being represented as situated consumer products intended for mass production, these forms live in exhibition and public environments.

Speculative Design works through what Gaver, Beaver and Benford (2003) describe as ambiguity of information. It is concerned with emerging science and technologies and

this means that the propositions are often unfamiliar. Therefore, what is produced, as Speculative Design is dependent on the construction of an external narrative and scenarios depicting the design's use. This is typified through methods of technocratic visualisation where the objects and the science they address is often depicted through film, image and other documenting material that contextualises the technology in everyday use. It is the antithesis of new science and technology. It is typically positioned in neutral everyday domestic contexts that exaggerates the technology and encourages reflection on the information inherent in the work.

7.2.3 Critical Design

If Speculative Design focuses on the future then Critical Design focuses on present social, cultural and ethical implications of design objects and practice. It is grounded in critical social theory. The designers scan the cultural horizon and offer a criticism from within design practice. The designers take influence from diverse sources including critical theory and material culture studies. At its core are Para-functionality and the aesthetics of use. (Dunne 1997, Hällnas and Redström 2001a).

Through mechanisms of defamiliarisation and estrangement, it extends the critical distance between the object and the user to make striking comment on current socio-technical, economic, political, cultural and psychological concerns. The critical approach is characterised by the articulation of the designer's own point of view. It is much more diverse and often much more cynical than Speculative and Associative Design. The designers are just as interested in the ideas that inform their designs, as they are in the finished product. Critical design shares some attitudes and perspectives that inform various forms of activism and culture jamming.

In critical design, it is vital for the user to experience a dilemma and carry something of a burden of interpretation. The critical designers' intention is to engage the audiences' imagination and intellect to convey a message. It often depicts fictive scenarios. Objects are proposed that would not exist in normal models of consumption because of social or cultural embargos. These objects suspend the user in an uncomfortable place between reality and fiction. These mechanisms prompt the question "what would need to change in our reality to enable these products to exist in a normal model of consumption?" It is in this tension between reality and what is inhibited from being real that debate is encouraged. The aim is to expose assumptions, provoke action and debate.

Critical design works through what Gaver, Beaver and Benford (2003) outline as relational ambiguity. The critical narrative is developed through a symbiosis of object and media external to the object. This external narrative is required because the objects that characterise critical design are less rational than associative design examples. As with Speculative Design the object requires situating in a context of use through mechanisms of narrative and storytelling established through narrative ways of naming, photography, film and documentary. Critical design is characterised by its dark humour. It works through juvenalian forms of satire where antithesis, obscenity and violence are used to engage the user.

7.3 Methods of classification

The analysis identified 'Satiric design' as a salient concept. Within this, Satire, Object Rationality and Narrative are identified as instrumental in critical design practice. These vary in Associative, Speculative and Critical design and can be used to differentiate and structure the types of practice in a taxonomic model.

7.3.1 Satire

Critical design practice delivers a satiric response to disciplinary, scientific or social concerns. Literary satire, with its established theoretical foundation, can be used to show how satire functions in critical design practice. Satire is the art of diminishing a subject by making it ridiculous and evoking attitudes of amusement, contempt, scorn or indignation toward it. It often takes the form of the genre it spoofs. This is important as critical design practice functions as a commentary by subverting product design, while at the same time refusing to abandon design principles.

Satire is used to engage through humour. A function of critical design practice, in line with the function of satire is constructive social criticism. In achieving this, the designers use wit as an instrument to afford critical reflection. Design functioning in this way holds vices, abuses, and shortcomings found in orthodox product design, scientific developments or socio-cultural conditions up to ridicule. This is done with the intent of shaming individuals, the discipline and society into improvement.

There are two major types of satire. Juvenalian satire is often political quite savage and works through narrative techniques of antithesis, obscenity and violence. Horatian satire is less political and savage it identifies folly and works through paradoxical techniques

of burlesque, colloquialism, exaggeration and anti-climax. The range of satiric techniques in each differentiates the practices outlined above.

Associative Design works through Horatian satire. In the Horatian approach, the designer takes an existing work that was created with a serious purpose, or an object with reputable characteristics and then makes the work look ridiculous by infusing it with incongruous ideas. This may be achieved by presenting it in inappropriate forms or by subverting its context of use. The work parodies design to construct criticism. Parody is a composition that imitates the serious manner and characteristic features of a particular work, or the distinctive style of its maker. It then applies the imitation to a lowly or comically inappropriate subject. It is a variety of burlesque. Burlesque is a form of satire characterised by ridiculous exaggeration. A serious subject may be treated frivolously or a frivolous subject seriously. The essential quality of burlesque is the discrepancy between subject matter and style. That is, a style ordinarily dignified may be used for nonsensical matter, or a style very nonsensical may be used to ridicule a weighty subject. The use of these techniques is discussed later in the examples of practice.

Speculative and Critical design work through Juvenalian satire. The Juvenalian approach is much darker. Fictional narratives are used to construct criticism or inquiry. Juvenalian satire works through narrative forms of allegory, exaggeration, antithesis, obscenity and violence. In this respect the Juvenalian designer approaches their work to attack erroneous thinking and the satire evokes feelings of contempt, shock, and righteous indignation in the mind of the user.

Speculative Design works through mechanisms of exaggeration, distortion and allegory. Recognition must however precede correction. Recognition on the users' part is achieved through the designer's use of allegory, whereby the designer constructs narratives of use around technological product and the application of new science. This is achieved by changing the perspective on a condition by separating it from its ordinary context, emphasising some aspects and playing down others. The satiric message is more likely to be remembered in the allegoric narrative because the vehicle of the story makes use of physical realities and quotidian systems of use.

Critical design works through antithesis, counter proposition and allegory. The narratives developed depict fictive social scenarios as a means to visualise alternatives. Critical designers often evoke dark humour using obscenity and violence.

7.3.2 The form of narrative

The type of narrative used to situate the design work in its context of use structures the thematic categories. Narrative describes the use of storytelling techniques to pass comment or inquire through the actions of designing. Storytelling situates the product in the system of use that allows the user to understand and engage with the design.

Associative Design uses a form of embedded narrative. The propositional objects offer a laconic criticism. In this context, the objects stand-alone and are rarely contextualised by external medium e.g. writing, imagery and film. The story is embedded in the object, through the materials used and the form the object takes. The objects function as critical language through subversion of familiar use and archetypical objects.

Speculative Design may also make use of these methods. However, because of the speculative and unfamiliar characteristics of the objects it requires a detailed narrative. Scenario building and prototyping new objects and technologies, situating them in new contexts of use through technocratic visualisation, establish this. These unfamiliar objects require a detailed narrative to illustrate their use and function. This is achieved through narrative ways of naming, film, photography and other mediums external to the object itself.

Critical design operates in a similar way making use of film, photography and narrative forms of naming to establish an *extrinsic narrative* to put the object in its context of use. In this context however, a topic is criticised because it falls short of some standard that the designer desires that it should reach. This is expressed through a critical narrative that ridicules or otherwise attacks those conditions needing reformation in the opinion of the designer. It is in the difference between the proposed scenario and societal convention that critique is established and debate provoked. The narrative is somewhat open and the user is meant to experience a dilemma and carry something of a burden of interpretation.

The type of narrative corresponds with the type of satire. Horatian satire by which Associative Design functions works through parody. The familiar forms and conventional understandings are parodied and subverted. The critique can be embedded

in the objects because of the users familiarity with the objects. The juvenalian satire by which speculative and critical design functions works through allegory. The proposed objects are unfamiliar and require contextualising through a story. In this context, the story is just as important as the object produced.

7.3.3 Object rationality

Object rationality refers to how rational an object is. In Associative Design, the objects produced are more rational; they are familiar and understandable in their own right. Subverting familiar objects and making the object strange, creates an ambiguity of context. This is useful in spurring people to approach a particular design with an open mind, and more generally, get them to question the assumptions they may hold about the object. As described above rational objects in critical design practice are typified by furniture; chairs, tables, lighting.

Because Speculative Design is concerned with abstract and developing technology, or scientific method is considered part of the design process, its objects are described as non-rational – not immediately understandable. The object and its use are dependent on the fabrication of external narrative to contextualise it. The focus here is on creating uncertainties about the information delivered through the design and its supporting narrative. The purpose of this may be merely to make the design work seem mysterious or impressionistic, but more importantly it can also compel people to join in the work of making sense of the design.

The objects that typify Critical design are also described as non-rational. Here the design is placed in context through mechanisms of narrative and storytelling. Relational ambiguity is used which leads the user to consider new beliefs and values, and ultimately their own attitudes. The unfinished relational aspects of the design create the conditions for a personal projection of imagination and values onto a design. This allows objects to become psychological mirrors for people, allowing them to question their values and activities.

Rationality, Narrative and Satire interlink. The more rational an object is, the more laconic the critique. The work operates as juvenalian satire. As the object becomes less rational, there is a need for an extrinsic allegoric narrative. The design work operates as horatian satire.

7.3.4 Operating contexts

The final element of the taxonomy outlined here is the operating context i.e. where it happens. This is a straightforward classification. The four operating contexts informed by the analysis are described as; Self-initiated studio projects – designer initiated or commissioned work. Educational student projects – carried out in the pursuit of a qualification. Academic design research – work carried out in an institutional context framed as research. Para-academic – work carried out in an institutional context commissioned or funded by industry. These four contexts provide means to visualise where projects are carried out. The operating context alludes towards what sort of outputs can be expected from a project.

7.4 Examples of Critical Design Practice

7.4.1 Examples of Associative Design

The work in this category takes a critical view of the design discipline offering a criticism from within design practice focusing on disciplinary concerns. Design method, its relationship to manufacture, materials, sustainability and habits in consumption are taken as the object of inquiry, exploration and critique. Examples of Associative Design include 'The Model world Maquette' Jurgen Bey (2007) which investigates notions of lightness – in terms of cutting down on weight.

Figure 7.3 Jurgen Bey *The Model world Maquette* 2007.

Bey is involved in analysing the real qualities as well as cultural and emotional meanings of the things in the built environment to provoke discussion about the value of the contemporary production processes. Bey believes that the model – normally conceived as a means rather than an end in product design – is particularly important as a tool for pursuing ideas beyond the constraints imposed by industrial production. Through the modelling process using materials such as cardboard and Styrofoam, he refers to something that does not yet exist but takes an ideological view to examples of situations and uses of design that should exist more widely. The work operates as parody.

Marti Guixé has described himself as an ex-designer to express protest against the increasing dominance of economic laws in the design market. Through Associative

Design Guixé, sets up laws that he wishes the market to submit to before breaking those laws himself. The expression is meant to send a message that says that he can go beyond the boundaries traditionally assigned to the design discipline but without leaving the profession behind. Stop Discrimination of Cheap Furniture chair that states its point and questions consumption and obsolescence.

Figure 7.4. Marti Guixé, *Stop Discrimination of Cheap Furniture,* 2007.

Martino Gamper's Associative Design is characterised by spontaneity and the collapse of the processes of design and making. In 'One Hundred Chairs in One Hundred Days' Gamper uses burlesque afforded through methods of 'cut up' and 'hybridity' to recombine elements of existing chairs into a series of unique seats. Gamper focuses on creating situations that include materials, techniques, individuals and spaces, and which favour meetings and discussion. His interest in the psychosocial aspects of furniture is translated in the use of un-wanted objects to create a disparate family of objects, site-specific installations and events. This project involved systematically collecting discarded chairs over two years, then spending 100 days reconfiguring the design of each one in an attempt to transform its character and function. Gamper's intention was to investigate the potential for creating useful new designs by blending stylistic or structural elements of existing chair types. The project suggests a new way to stimulate design thinking, and provokes debate about a number of issues, including value and

different types of functionality. It draws attention to obsolescence, clutter and the vernacular.

Figure 7.5. Martino Gamper, *100 chairs 100 days,* 2007.

Through furniture and lighting, Julia Lohmann examines user relationship with the natural world. In 'Cow benches', Lohmann makes comment in consumer relationships with animals and the production of them to meet needs.

Figure 7.6. Julia Lohman, *Cow Benches: A leather bench or bovine memento mori,* 2005.

Through burlesque, the benches in their familiar but contorted form remind the user where materials come from. The 'cow-bench' explores the threshold between animal

and material by presenting a highly finished leather bench in a form that is not far enough removed from the raw material it is made from.

Ball and Naylor use methods of burlesque. In Chair anatomy 2008, waste furniture is cut up and reassembled to exaggerate its structure and assembly, to give it new meaning and pass comment on product obsolescence and consumption.

Figure 7.7. Ralph Ball and Maxine Naylor, *Chair Anatomy*, 2008.

In 24 Star Base, they bring their description of modernist design to its logical extreme through reductio ad absurdum delivered through overstatement. Their laconic narrative tells the story of the Johnson secretarial chair designed for the Johnson building by Frank Lloyd Wright.

Figure 7.8. Ralph Ball and Maxine Naylor, 24 *Star generic office chair*. 2003-04.

The chair was initially criticised for only having three legs on its base. Shortly after its production, the design was modified to make it more stable. Later secretarial chairs were required to have five legs on their base. This in turn made many chairs instantly obsolete. Ball and Naylor preserve the chair by adding a five-legged base to the original four. Thus in the design they articulate the chairs history while passing criticism on a culture of obsolescence. This is an extreme example of form following function.

In the 'Toaster Project' Thomas Thwaites explores how in consumer society we are alienated from the manufacture of domestic products. He set about making a toaster from raw materials. The design process involved everything from mining the materials through to the design, production and assembly of the toaster's components. The project questioned the contrast in scale between the products we use and the industry that produces them. The laboriousness of producing the most basic material from the ground up exposes the fallacy in a return to some romantic ideal of a pre-industrialised time. Thwaites suggests that at a moment in time when the effects of industry are no longer trivial in relation to the wider environment, the throwaway toasters of today seem unreasonable. Through exaggeration and overstatement he delivers a toaster and

questions if the provenance and the fate of the things we buy are too important to ignore.

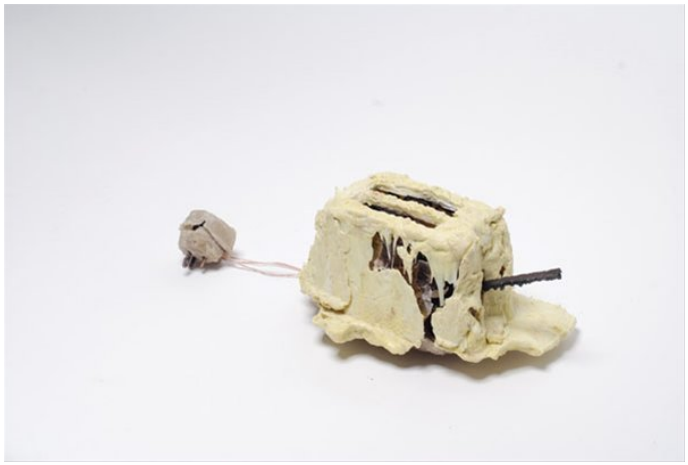


Figure 7.9. Thomas Thwaites, *The Toaster Project,* 2009.

7.4.2 Examples of Speculative design

The work in this category takes a critical and substantive view of developing science and technology. In a number of projects, Dunne and Raby consider developments in technologies such as biotechnology and the opportunities such advancements might offer the product designer. They explore what designers can offer expert discussions on science and technology. In this tradition projects include 'Consuming Monsters: Big, Perfect, Infectious', which examines a role for design in the debate about our bio-technological futures.

Figure 7.10. Dunne and Raby, *Evidence Dolls,* 2005.

In their 'Bioland' project, they address the social and ethical implications of biotechnology. They present an 'existential shopping centre' with 'departments' such as birth, death and marriage in a genetically modified world. Raby's 'Evidence dolls' is used

to provoke discussion among young women about the impact of genetic technology and how it affects their choice of lovers. The customisable plastic doll allows the user to visually describe their partner. A draw allows the user to store a DNA sample in order that they may evaluate the genetic potential of lovers.

Dunne and Raby's 'Foraging' project works through techniques of distortion by taking scientific activity, out of the lab as a means to address overpopulation through bottom up, guerrilla tactics. Their allegorical account states that according to the UN we need to produce 70% more food in the next 40 years. However, we continue to over-populate the planet, use up resources and ignore warning signs. Proposing a solution they look at evolutionary processes and molecular technologies and how we can take control of this situation, people will need to use available knowledge to build their own solutions and embraced the power to modify us. 'Foragers' is essentially about the contrast between bottom-up and top-down responses to a massive problem and the role-played by technical and scientific knowledge. It builds on existing cultures currently working on the edges of society, who may initially appear extreme– guerrilla gardeners and garage biologists. However, by adapting and expanding these strategies, they become models to speculate.

Figure 7.11. Dunne and Raby, *Foragers,* 2010.

Elio Caccavale applies design in collaboration with bioethicists to explore issues surrounding reproductive technologies and family forms. He builds on an analysis of SciArt practices to develop a role for product design that fosters interdisciplinary dialogue between designers and scientists. Caccavale's methods are integrated with those of bioethicists with a view to use design proposals and assisted conception and

surrogacy, as case studies to make issues that surround life sciences more tangible for wider audiences.

Caccavale's 'MyBio' project investigates the moral, social, cultural, and personal responses to transhumant bioscience. His design aims to provoke discussion about genetically modified human/animal hybrids in actual and near-future biotechnology. Collaborating with Bioethicists Prof Richard Ashcroft (Imperial College London) and Prof Michael Reiss (London Institute of Education) the project explores the relationship between children's learning of the categories of the animal/human, and the extent to which such categories can be considered merely contingent and revisable in the light of technological change.

Figure 7.12. Elio Caccavale, *MyBio,* 2007.

Tobie Kerridge Nikki Scott's 'Biojewellery' presents the use of cultured bone tissue from two people as material for wedding rings. They collaborated with bioengineer Ian Thompson (King's College London). Doing science actually became part of the design process. The project was based on the premise that bone tissue cultivated outside a patient's body is used in reconstructive surgery to repair damage caused by injury or disease. As the science behind this process develops, it begins to spark curiosity, desire and speculation about alternative uses of this technology and material. 'Biojewellery' explored one alternative. They used the techniques of bone tissue culturing to provide two couples with rings symbolising their relationship. Their Speculative Design sought

to provoke debate about the relationship between scientific progress and the public imagination.

In 'Happylife' Auger-Loizeau, use Speculative Design to question what would it mean when an electronic device knows more about your partner's emotional state than you do. 'Happylife' is the result of an on going collaboration with the Computer Science Department Aberystwyth University. Reyer Zwiggelaar and Bashar Al-Rjoub's EPSRC funded research that looks at real-time dynamic passive profiling technique. By reading changes in physiology, it communicates the user's emotional state and based on the data it can predict changes in emotional state. Auger Loizeau built a visual display linked to the thermal image camera that acts like an emotional barometer, one for each member of the family. In the context of security, criminality and safety this technology is accepted however dark or invasive the application. However, with a shift to apply this technology in the domestic context, the justifications for its use is removed allowing and the technologies can be questioned for what it actually is.

Figure 7.13 Auger Loizeau, *Happylife*, 2009.

Auger-Loizeau and Alex Zivanovic's 'Carnivorous Domestic Entertainment Robots' propose an alternative perspective on domestic robots. The project explores the function that may afford the co-existence of humans and robots in the home. They resist a stereotypical form normally associated with robots and look more like household accessories.

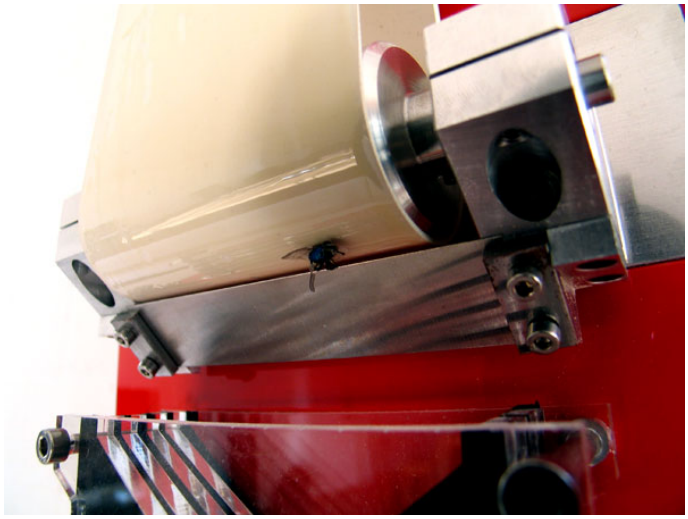


Figure 7.14. Auger Loizeau. *Flypaper robotic clock: Carnivorous Domestic Entertainment Robots,* 2009.

The robots utilise a microbial fuel cell as an energy source that reference strategies of predatory insects, reptiles and plants. In their allegoric narrative Auger and Loizeau, propose that the user might sit around the objects waiting for the moment when the prey is captured and slowly transformed into moving energy bars on the graphic displays built into the objects thus providing a dark form of entertainment. The project works through a form of distortion, a satiric technique that separates the object and technology from its ordinary surroundings, emphasising some applications while playing down others. The technology is over determined for the functions of the objects.

Philips design in the Netherlands has commissioned projects described as speculative design. An example of this is James Augers commission *Smell+*. The project explores the human experiential potential of the sense of smell, applying contemporary scientific research in a range of domestic and social contexts. In one example, Auger speculates with objects that utilise Dogs' ability to detect cancer through the sense of smell and the animal is used medically as a diagnostic tool.

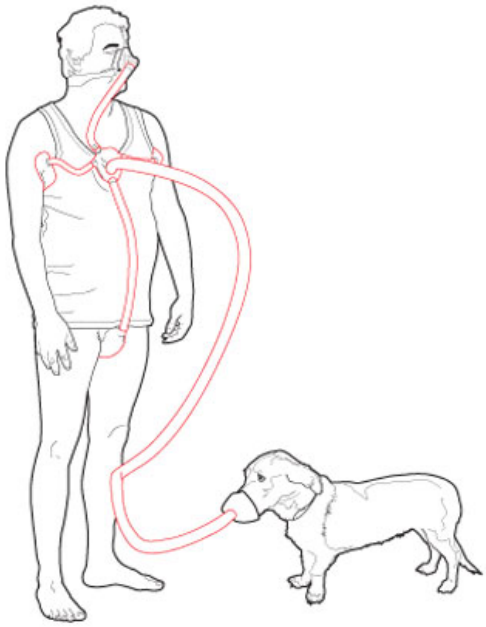


Figure 7.15. James Auger for Philips, *Smell+ Health and Well-being*, 2009.

Daisy Ginsberg uses design to explore the implications of emerging and unfamiliar technologies, science and services. In Growth Assembly, she proposes that synthetic biology might enable the user to harness our natural environment for the production of products. Coded into the DNA of a plant, product parts grow within the supporting system of the plant's structure. When fully developed, they are stripped like a walnut from its shell and are ready for assembly. Using biology for the production of consumer goods has reversed the idea of industrial standards, introducing diversity and softness into a realm that once was dominated by heavy manufacturing. The product shown here is the Herbicide Sprayer, an essential commodity used to protect delicate engineered horticultural machines from older nature.

Figure 7.16. Daisy Ginsberg *Growth Assembly* 2009

7.4.3 Examples of Critical design

The work in this category focuses on social, cultural and ethical implications of design objects and practice.

In the project 'Consequences of use', (Malpass, 2009) I explore the behavioural and psychological effects that result from the use and misuse of mobile phones. The project is a critique of instrumental theories of technology as a neutral entity and takes a substantive view of mobile communication technologies. The project includes mobile phones packaged with offensive weapons to draw attention to the misuse of the cameras integrated into the mobile exploring its role in instances of 'happy slapping'. A second design proposal explores technological addiction and positions creative obsolescence as a therapeutic treatment. In a third proposal the loss of technology is treated through a first aid kit that reconnects the user. The project explores the concept of 'user' in the sense that the term is used in addiction. Through design, 'Consequences of use' explores messier contexts of use inquiring into the agency of the mobile phone and resulting anxiety, addiction and violence.

'ASBO' focuses on the 'happy slapping' phenomenon – random acts of violence captured on the mobile. It questions how the integration of video into the mobile phone might facilitate acts of violence. The design packages mobile phones with offensive weapons. It is intended to question the phone's agency in these acts. The package consists of a video mobile and a knuckle-duster accessory. The range is branded for 14-19 year old girls.

Figure 7.17. Matt Malpass *ASBO Mobile Phones* 2006

'First aid for users suffering a loss of connection' explores technology as human extension. Rather than considering the physical integration of technology into the body, the project considers the psychological link between user and mobile phone. It questions the need to treat a loss of connection as we would an injury. The design provides means for the suffering user to synchronise lost technology with emergency devices on which you can download a saved profile reconnecting you to your digital world.

Figure 7.18. Matt Malpass, *First aid for users suffering a loss of connection* 2006.

Natalie Jeremijenko's projects carried out at the xClinic New York University can be categorised as critical design. They explore opportunities presented for non-violent social change. The work centres on structures of participation in the production of knowledge and information, political and social possibilities and limitations of information and emerging technologies. This is done mostly through public

experiments. The clinic follows the metaphor of the healthcare facility to its logical end, emphasising that ultimately it is up to the inpatient to take responsibility for their concern.

In 'Anxious Times Designs for Fragile Personalities' Dunne and Raby, celebrate humans as contradictory, complex and psychologically flawed. Obscenity, violence and understatement are used as satiric techniques. They play down fear of nuclear annihilation proposing products that condition the user to become comfortable with the idea. The project has a serious function as it is designed to explore the concept of fear and anxiety.

Figure 7.19 Dunne and Raby, *Huggable Atomic Mushroom Design for Fragile Personalities in Anxious Times,* 2004.

Dunne and Raby's 'Placebo project' shifts the role of design from affirmation of norms to enquiry. Explicitly "taking conceptual design beyond the gallery into everyday life," (Dunne & Raby, 2002, p. 11) eight prototypes with relations to the electromagnetic properties of technology were produced. "Made from MDF and usually one other specialist material, the objects are purposefully diagrammatic and vaguely familiar. They are open ended enough to prompt stories but not so as to bewilder." (Dunne & Raby, 2002, p. 11) Homes were found through ads in the classifieds – 'adopters' lived with the object for some time, with impressions collected in follow up interviews. For example

Diane and Arabella, adopters of the 'Compass Table', a coffee table embedded with twenty five magnetic compasses found themselves moving it around their house plotting various compass readings in a behaviour similar to 'trainspotting'. As a result, personal narratives and emerging behaviours were exposed as relationships with the objects developed over time. The project works though allegory where Dunne and Raby construct narrative stories around placebo objects by which they draw the user's attention to an unseen environment and by extension the opportunities and threats that that environment might offer.

Figure 7.20 Dunne and Raby, *Placebo: Electromagnetic Draught Excluder,* 2000.

'Is this your Future' is a critical design experiment commissioned by the Science Museum London UK. Dunne and Raby explore potential energy futures they present a collection of hypothetical products to explore ethical, cultural and social impact of different energy futures. Photographic scenarios were used to communicate a set of values driven by social as well as technological changes. The scenarios included bio-fuel created from human waste. The satire is at once very subtle and very simple, however Dunne and Raby's proposal is not at all modest and an excellent example of Critical Design working through juvenalian satire. They suggest using child labour to produce energy and take responsibility for their energy consumption the project works through understatement and obscenity playing down child labour and tapping in to the technical possibilities of using human waste to power domestic consumer products.

Figure 7.21 Dunne and Raby, *Is this your future*, 2004.

Toran's project 'Objects for Lonely Men' is classified as Critical Design. Through the design, Toran tells the story of a man so obsessed with Jean-Luc Godard's A Bout de Soufflé that he builds a tray that reflects the physical language of the film. The tray contains a series of objects that the man interacts with. The objects include a mannequin head which resembles Jean Seberg – the female lead, a gun, a hat similar to the one Jean-Paul Belmondo wears in the movie, telephone, Herald Tribune newspaper, sunglasses, ashtray, steering wheel, rear view mirror and a pack of Gitanes non-filtered cigarettes.

The project addresses the influence of film on identity and fantasy. It explores how objects often mediate these fantasies. The work uses products and film to investigate anomalies in human behaviour that reflect retaliation against imposed social conformity. In the project there is a darkly humorous conflict established by techniques of antithesis. Toran denotes a behaviour that sits outside social conformity. The objects presented in the film satisfy a deep psychological need and are presented in an understated way. They seem relatively normal. Through this, he aims to question the systems that organise society.

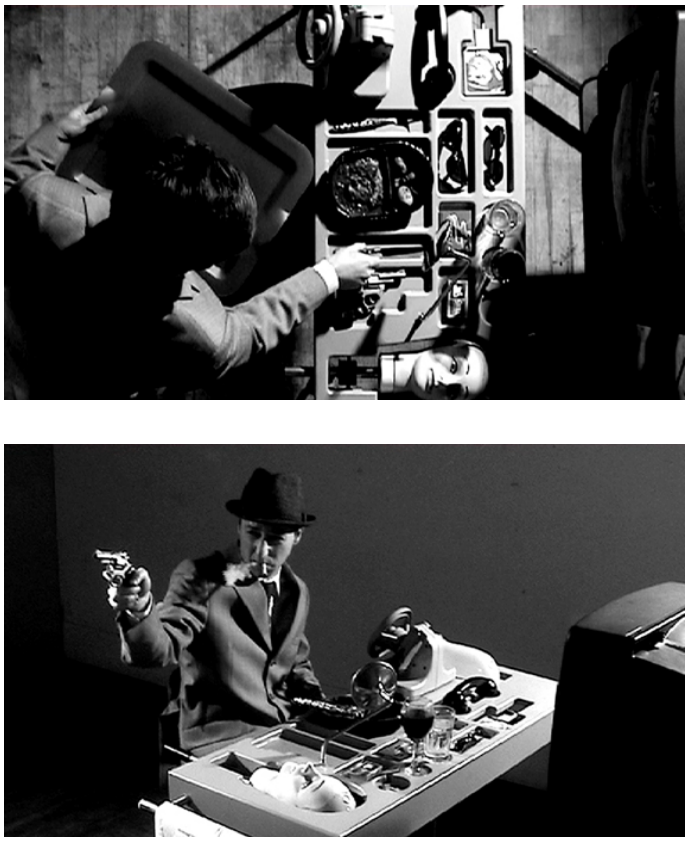


Figure 7.22 Noam Toran, *Objects for a lonely man [film stills,]* 2000.

Onkar Kular's 'Hari and Parker' is another typical example of critical design. Kular conceived the characters Hari and Parker for 'The Science of Spying exhibition' at the Science Museum, London. Kular sets up an imagined alternate reality in which children are recruited to spy for the government conditioned and helped along by Hari a rabbit and Parker a bear. Kular concocted a whole line of children's products featuring the characters. Hari has a microphone ears that intercept text messaging, and Parker's nose hides a camera, while his paw is a fingerprint scanner to aid children in committing acts of domestic surveillance. The project works through understatement and caricature playing down the increasing presence of surveillance and information exchange in contemporary society.

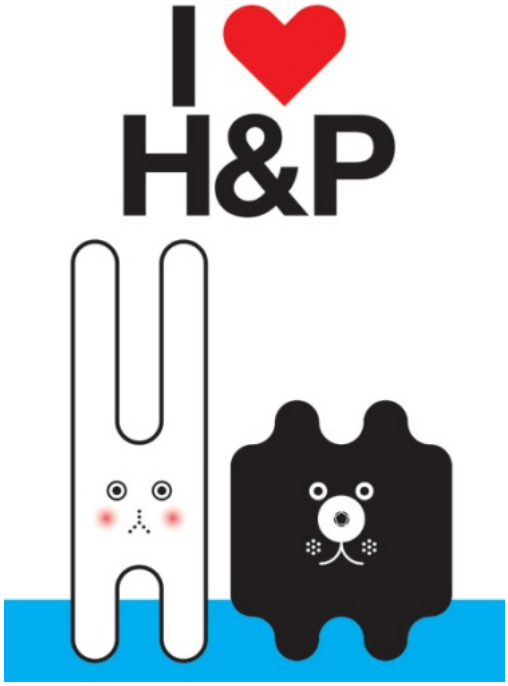


Figure 7.23. Onkar Kular, *Harry and Parker*, 2007.

Before Kular, Vexed Generation was exploring similar themes commenting on, amongst other things, a culture of surveillance through design practice. Designers Adam Thorpe and Joe Hunter conceived the Vexed Parka to meet both the practical needs and political concerns of the urban generation. The designers considered personal safety and protection against air pollution. However, they also address civil liberties, street protest and CCTV surveillance through the design. Violence and understatement are used in their satiric response in the form of the Parka.

Figure 7.24. Adam Thorpe and Joe Hunter Vexed Generation, *Vexed Parka*, 1995.

7.5 The taxonomy as an analytical tool

This section begins by introducing the components of the taxonomy illustrated in Figure 7.25. The top half of the model shows the categories of practice. The three practices are structured alongside each other, from right to left: Associative Design through Speculative Design to Critical design. The type of ambiguity that each of the practices operates by is shown i.e. Ambiguity of context, Ambiguity of Information or Relational Ambiguity. The design methods that are used to build ambiguity into the design work, and establish the system of use are also illustrated i.e. 'cutup' – 'extrinsic narrative.'

Moving from Associative Design, through Speculative to Critical Design, the characteristics of the objects become less rational, the objects are typically less familiar. Because of this, more of an external narrative is required to situate the object in its system of use in speculative design and even more so in critical design. This is illustrated graphically by how the filled space representing the categories of practice increases from Associative to Critical Design. Moving from Associative Design to Critical Design there is also a scale of Satire ranging from horatian in Associative Design through to juvenalian in Critical Design.

The three categories of practice in the top half of the model are reflected in the bottom half. This half of the model is sectioned according to the context that a project is carried out from. These contexts are studio projects, education, research and para-academic contexts. This allows examples of Associative, Speculative and Critical Design to be plotted against the context in which they were carried out.

The visual taxonomy shown in Figure 7.25, facilitates the placement of Associative, Speculative and Critical Design projects in such a way that projects can be mapped, contrasted and trajectories of practice drawn. The taxonomy in its visual dimension presents an illustrative summary of this research.

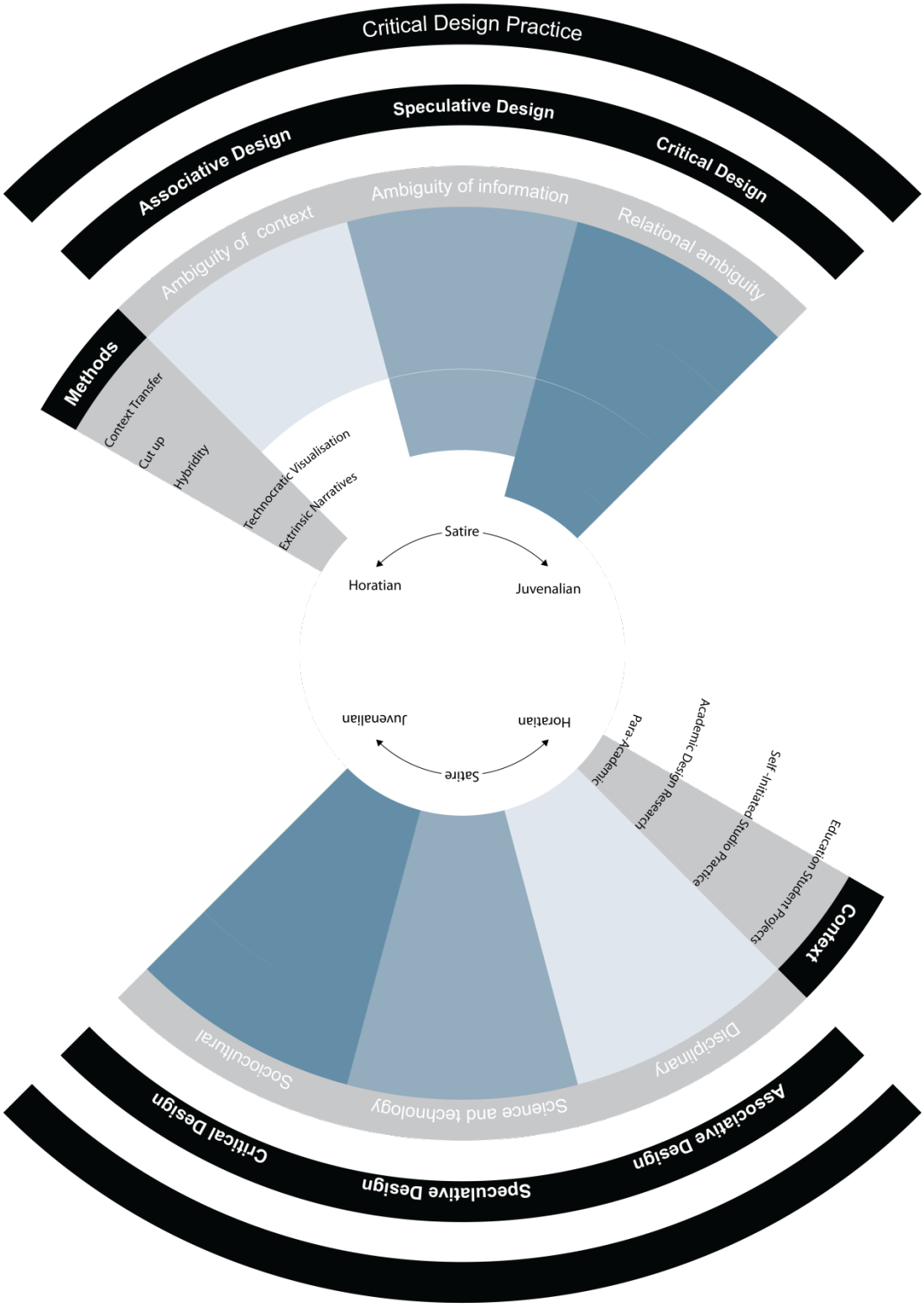


Figure 7.25. Taxonomic Model: The model organises the concepts developed through the research and analysis to create a space to plot examples of practice.

Practice	Method	Definition	Type of Satire	Type of ambiguity	Object rationality
Associative Design	Cut up	When one or more objects are cut up or reassembled to exaggerate their properties and give new meaning	Horatian: Burlesque Double-entendre Incongruity Parody	Ambiguity of context	Rational Familiar archetype
	Context transfer	When one object is taken out of context and placed into another			
Speculative Design	Hybridity	One archetype integrated with another archetype. This might take the form of two objects but also practices. For example, technology that exists in a laboratory context is placed in a quotidian setting.	Horatian into Juvenalian: Allegory Anticlimax Distortion Exaggeration Narrative	Ambiguity of Information	
	Technocratic visualisation	By technocracy is a wide-ranging visual system that is legitimised by specific reference to scientific expertise. The science rationalises the proposition.			
Critical Design	Extrinsic narrative	A fictional external narrative is established to situate the object. Questions are raised in the difference between 'reality' and the materiality proposed through the object and its narrative of use.	Juvenalian: Allegory Antithesis Obscenity Violence	Relational ambiguity	Non-rational Unfamiliar archetype

Table 1 Taxonomic Matrix. The matrix illustrates the relationship between the types of practice and the methods used. It shows how the design methods relate to the type of ambiguity, the type of object rationality, the type of satire, and establish forms of narrative.

7.6 Applications of the taxonomy

The model can be used as a background to *compare* design projects by mapping the terrain. It can be used to *plot* designer's current projects. The model can be used to chart a designer's activity over time mapping *trajectories* of practice or used to map *clusters* of projects and trends in the practice.

7.6.1 Terrain

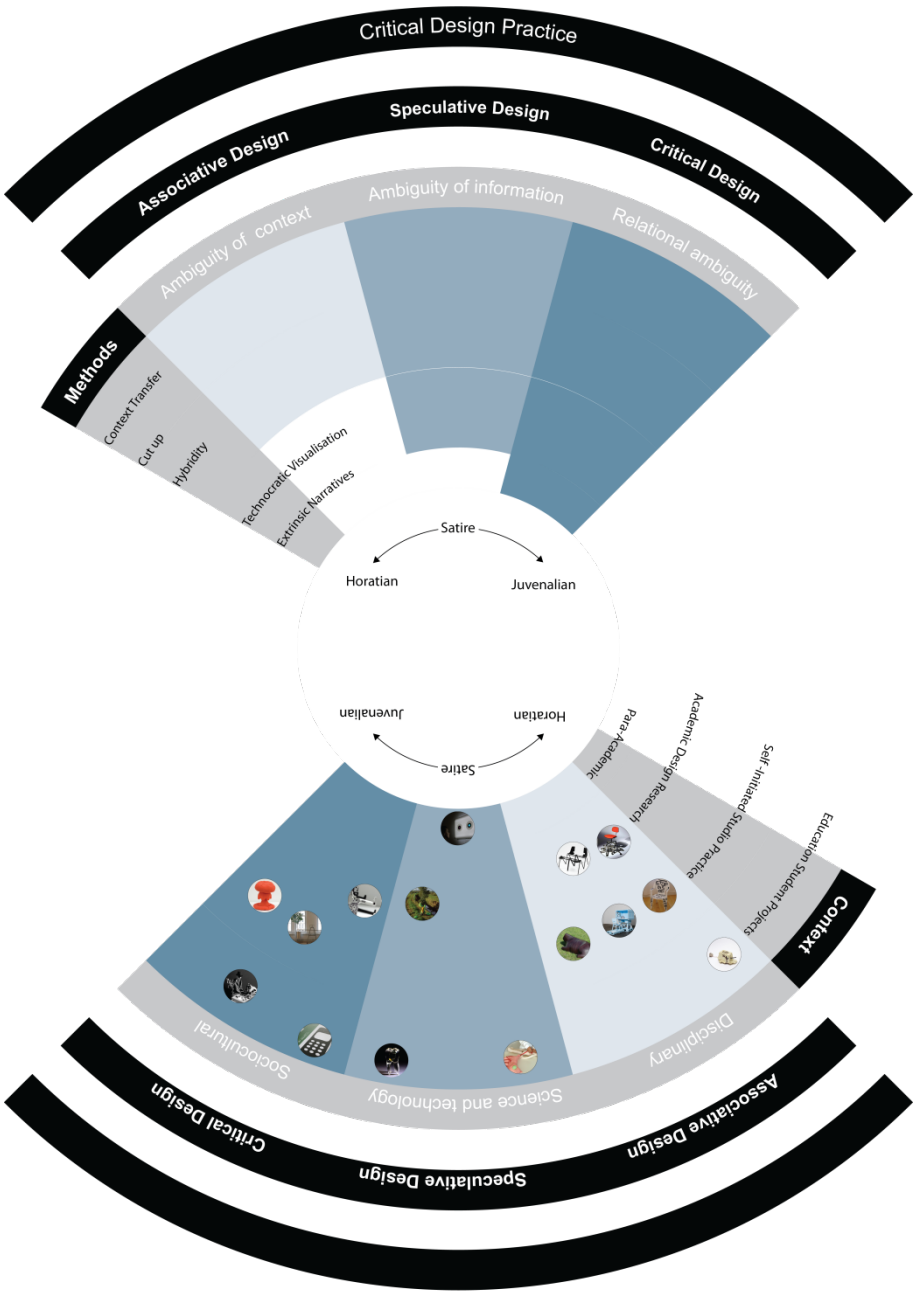


Figure 7.26 Mapping the terrain: projects are plotted according to the contexts they engender and where they are carried out. This gives a general view of the field. The above is populated with design examples discussed in section 8.5

7.6.2 Plots

The model can be used to plot designers' projects. It can illustrate what projects a designer is involved in at any one time and if there is a clear correlation of activity in any of the three types of practice.

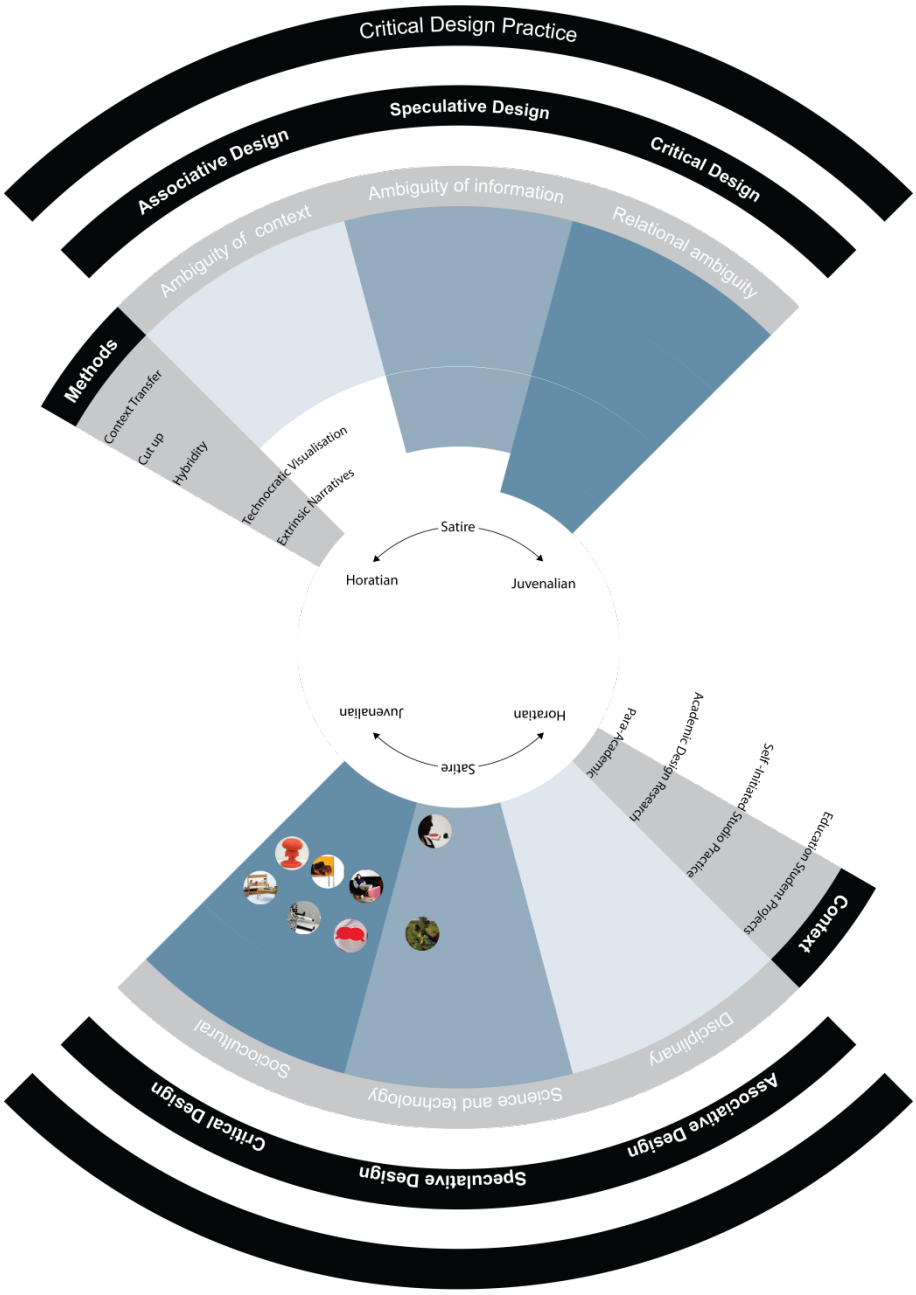


Figure 7.27. Plots: In this example the space has been popularised by a selection of Dunne and Raby projects sourced from their website see: www.dunneandraby.co.uk/content/projects

.

7.6.3 Trajectories of practice

The taxonomy can be used as a background to discuss trajectories of practice by plotting projects by the date when they were carried out. This might be used to plot a single designer or studio's practice or may include examples from a number of practitioners.

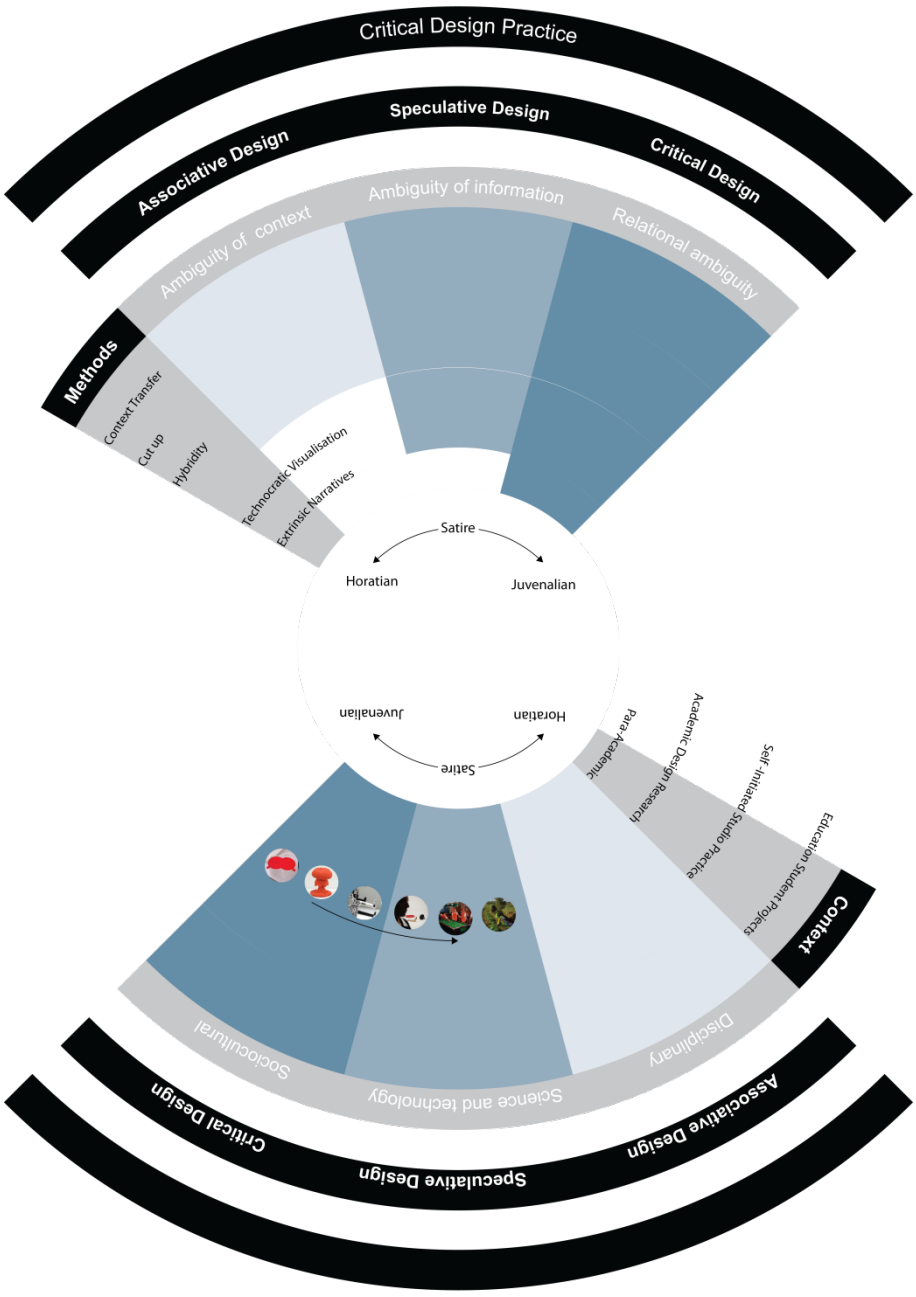


Figure 7.28. Trajectories of practice: In the above example, Dunne and Raby projects carried out 2004-10 are placed right to left to show the trajectory of practice from Critical design into Speculative forms of design.

7.6.4 Clusters

The model can be used to identify clusters of activity and trends in projects at a specific time. Clustering a designer's body of work or a larger community's work allows questions to be asked of why that activity was so prominent at a specific time. This might be cross-referenced with other factors for example, funding themes, theoretical trends or socio-technical, and political considerations.

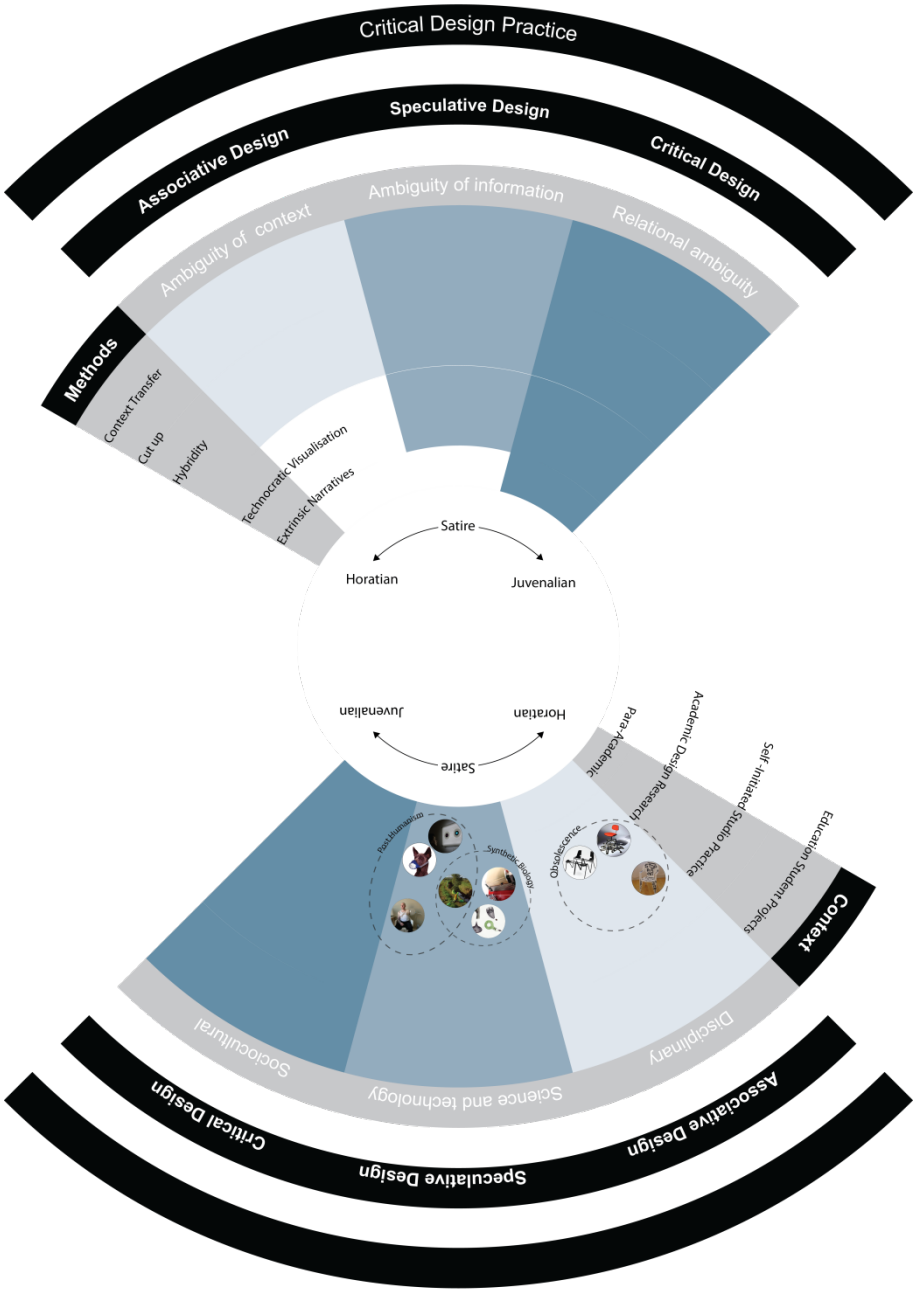


Figure 7.29. Clusters: The model is populated with projects and these projects are further clustered according to specific themes. For example, recently (2009-11) there has been a trend in Post-humanism and synthetic biology themes in Speculative design. Where in 2005-08 Ball Naylor and Guixé were using furniture to comment on consumption and product obsolescence.

7.6.5 Comparisons

The model can be used to draw comparisons between practitioners. For example, it can be used to analyse the content of an exhibition or works documented on a designer's website. Below it is used to illustrate projects described in Ball and Naylor, Noam Toran and James Auger's interviews.

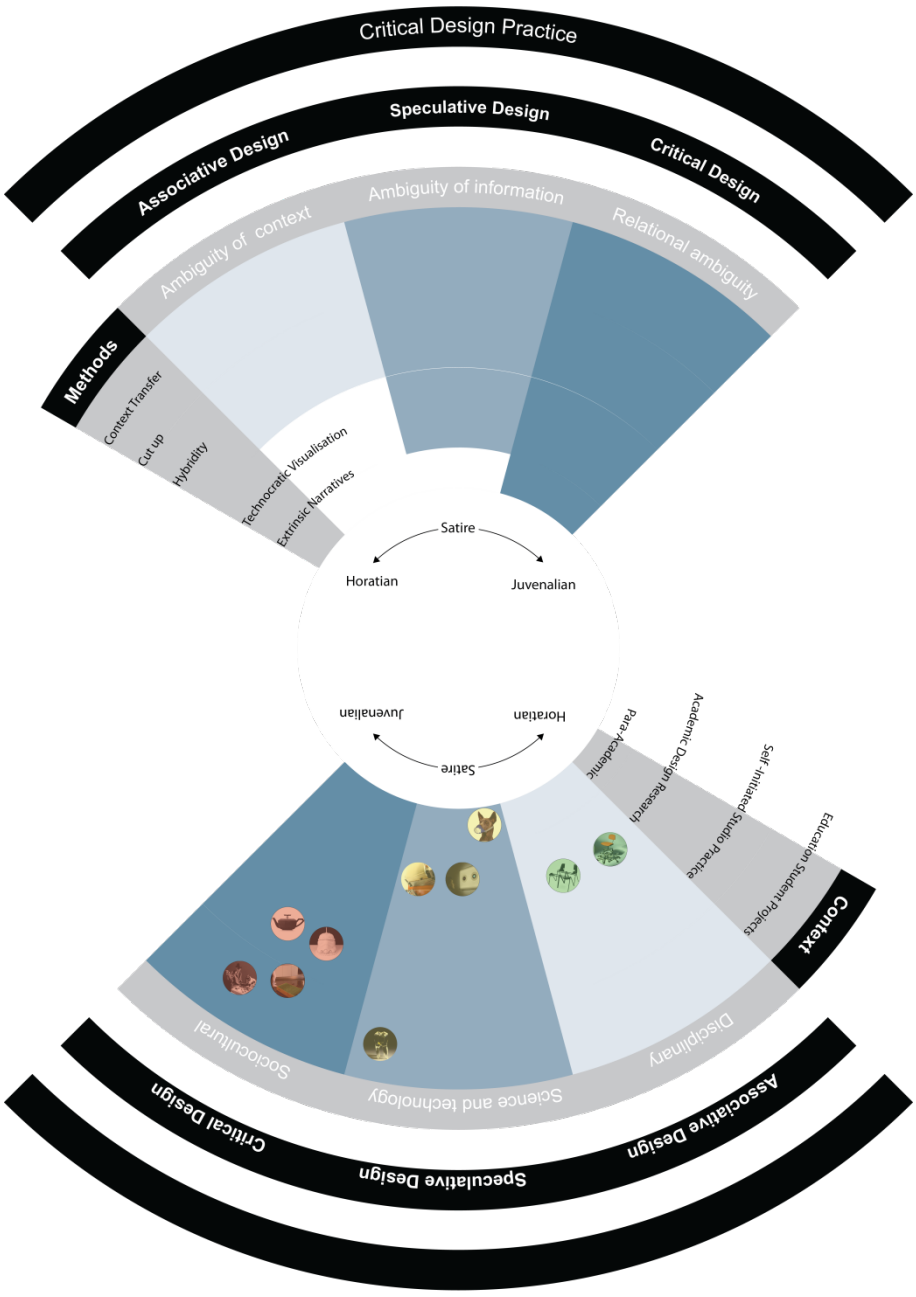


Figure 7.30. Comparisons: Above the taxonomy is populated with projects described in the interviews. Activity carried out By Noam Toran is shown with a red overlay, Auger-Loizeau yellow and Ball and Naylor green.

7.7 Conclusions

This chapter has presented the main contribution of this research, a *Taxonomy of Critical Practice in Product Design*. It has defined three specific types of critical design practice. Informed by the extensive contextual review discussed in chapters 2-4 and the interview analysis, it has outlined the methods by which the practice operates and the contexts in which the designers operate. The result is a taxonomy consisting of a visual model and a descriptive account describing the three types of critical design practice and the methods used in each of the three types of practice.

The chapter began by outlining how the taxonomy has developed over the course of the project before presenting it in its final iteration, populating it with examples of practice and illustrating its application. In this final iteration, Associative, Speculative and Critical Design were categories of practice informed by the analysis and salient concepts identified from the analysis in chapter six. Specifically informed by concept identified through the focused coding as Engendered contexts: Discipline Science and Society. While the actual methods, techniques, and tools used in these activities can be quite similar, Associative, Speculative and Critical Design are primarily different in tradition and perspective. Associative Design addresses concerns familiar to design discourse for example, sustainability, consumption and production. Speculative Design is concerned with designs role in a scientific and technical paradigm for example designers engaging themes of synthetic biology and developments in post-human technologies. Critical Design uses design as a form of social commentary inquiring into socio-cultural concerns.

The chapter has positioned critical design practice as a Satiric form of design again this was informed by the focused coding specifically what was revealed in identifying the concept of Satiric Design. All three categories of practice function as type of Satiric Design. To better understand how satire works in critical design practice the theories surrounding literary satire were examined and integrated into the definition of satire as a method of classification. This revealed that Associative Design works through horatian forms of satire using mechanisms of parody. Speculative Design works through horatian and juvenalian satire through exaggeration and distortion. Critical design works through horatian Satire through obscenity and antithesis.

Additionally, the chapter has established how satire relates to the type of ambiguity used in each of the three types of practice, and by extension how rational, an object is.

Therefore, these three concepts, Satire, Ambiguity and Object Rationality relate to each other and all help to characterise and differentiate between Associative, Critical and Speculative Design practice.

The relationships between the categories of critical design practice, the design methods used in critical design practice and the methods of classification are summarised in table 1. These are all structured into a taxonomic space that offers theoretical apparatus to engage with the field of critical design practice. Throughout the chapter, the taxonomy has been populated with examples of critical design projects to illustrate the models application as an analytical tool and apparatus for discussion. To conclude the taxonomy provides means to map the territory of critical design practice offering observes of the practice a territory to analyse and critique. The implications of the taxonomy and its application are detailed in the following and concluding chapter.

Chapter eight

Conclusion and implications

8 Conclusion and implications

The contribution to knowledge of this research is a *Taxonomy of critical practice in product design*. This conclusion expands on the contribution and indicates the discussions in the thesis that support it. The thesis concludes by outlining some implications of this research, describing the potential use of the taxonomy and future considerations for research into critical design practice.

8.1 Achieving the aim and contextualising critical design

This research aimed to problematise, define and reassess the concept of 'critical design,' situating it among other forms of critical design practice. The aim was developed on the premise that there is a colloquial understanding of critical design synonymous with the work of Dunne and Raby. Moreover, this definition is today used to represent almost any form of critical practice in product design. There is however, a rich diversity in critical design practice and some practicing in the field have their work described as critical design yet their aims, and the values engendered in the work produced are distinctly different than Dunne and Raby's practice.

The aim of this research has been satisfied by developing a taxonomy of practice that situates critical design with two other distinct types of critical practice. The research has shown how 'Critical Design' in the Dunne and Raby model, is part of a larger and older tradition of critical practice and that the colloquial understanding that prevails does not go far enough to represent the diversity in the practice. The interviews revealed how Dunne, Raby, Auger and Kerridge acknowledge this point, describing how the practice has moved from traditions of an oppositional form of critical practice into realms of speculation. Moreover, all the designers interviewed expressed their suspicion about the limitations of a hegemonic 'Critical Design,' hence their wariness of describing themselves as critical designers. They voiced suspicion of the term acknowledging that it is not representative of all the work that is today carried out to establish a critical position or a critical form of inquiry through product design.

Three specific fields of activity are identified. *Associative Design, Critical Design and Speculative Design.* The introduction of these categories of practice in the context of the taxonomy contributes towards advancing the disciplinary vocabulary used to discuss examples of critical design practice addressing the concerns of Pullin (2010), Moline (2007) and Raby (2008) who argue for a richer vocabulary to describe critical practice. The taxonomy ultimately places Critical Design – distinct in its character – in a broader context of critical design practice.

8.2 History informing a theoretical understanding

Chapter two placed critical design into historic context. The chapter was written in response to claims made by David Crowley[37] at an RCA seminar 'Dialogues in design: design as a medium as a medium' (2010) that, scholars writing about 'Critical Design' suffer a form of "design amnesia," his assertion was that critical design did not start at the RCA or with Dunne and Raby. By this, Crowley expressed concern that often research about critical design makes little reference to the rich and diverse history of critical practice that exists in product design.

In hindsight and with the insight gained from the literature review, this was a fair claim. Like Robach (2005) Crowley's concerns go some way to critique the colloquial understanding. Their views are useful in this research because they provided warrant to challenge this understanding – the forgotten history – additionally they present a call to explore the diversity in contemporary and historic examples of critical design practice.

In response to these concerns, the discussion in chapter two described how the term critical design appeared some twenty years ago in the design research community as a particular approach to human-computer interaction. Referring to a longer tradition of critical approaches in product design and architecture, it was meant to re-establish alternative views on product and interface design, telling stories about human values and behaviour that were neglected in commercial product design. The discussion charted a history from Radical Design in the Italian tradition, Anti Design, New Design and Conceptual Design in the German and Dutch traditions, critical practice in HCI, Interaction Design and Critical Technical Practice. Associative, Speculative and Critical Design projects carried out today are heavily influenced by the methods and approaches

[37] Professor David Crowley is head of Critical writing in Art and Design at the RCA he has a specialist interest in critical and speculative design practices. At the time of his comments, he was deputy head of the RCA's History of Design programme.

developed in these preceding practices. They are influenced by the anti-capitalist, anti-commercial, ethically led and activist ideologies that informed earlier modes of critical practice.

The discussion showed how contemporary examples of critical design practice are informed by aesthetic principles found in older examples. To illustrate this Peter Cook's Archigram 'Airships' were set alongside Brendan Walker's 'Chromo 11' and Superstudio's 'Fall in love machine' alongside Dunne and Raby's 'After life euthanasia machine.' These examples show how the design language in critical design practice today mirrors, or at least is informed by work produced over forty years ago.

The benefit of looking at the history of critical design practice came from identifying design methods used to establish the critical move through design. The review of precedents identified, 'cutup', 'context transfer', 'hybridity' and 'technocratic visualisation', (Scholz cf. Brandes, Stich, & Wender, 2009) as methods used to build ambiguity into objects. These methods are used in contemporary examples of practice. From a theoretical perspective, they offer means to differentiate between examples of Associative, Speculative and Critical Design. This is exemplified in how they are used to inform the structure of the taxonomy presented in Figure 7.26 and table 1.

8.3 Ambiguity

Chapter three focused on a more recent history, on the discourse surrounding critical design since the development and popularisation of the term c.1993. It described – through example – the use of product design to address various social, technical, scientific and disciplinary concerns. The discussion outlined the theoretical perspectives that ground critical design practice outlining the perspectives of Dunne (1997), Redström and Hällnass (2002), Gaver (2001) and Ball and Naylor (2005). It focused on the 'aesthetics of use', 'correspondence and context', 'para-functionality' and the 'post-optimal object.' It described the instrumental use of 'ambiguity as a resource for design' and established that designing ambiguity into the object – in its appearance and its use – is instrumental in establishing the critical move through product design.

The type of ambiguity designed into critical design work was identified as another means to differentiate between examples of critical design practice. With reference to Gaver, Beaver and Benford (2003) three types of ambiguity were identified. Associative Design works through 'ambiguity of context', Speculative Design works through

'ambiguity of information' and Critical Design through 'relational ambiguity'. The instrumental use of ambiguity to differentiate between the categories of practice is summarised in Table 1.

8.4 Establishing a dilemma of interpretation

In practical terms, the discussion set out in chapter three illustrated the sensitivity required when designing ambiguity into objects as a means to spark debate, engagement or to establish the critical move. For Associative, Critical or Speculative Design to work the objects designed must be seen as design objects. This point was made repeatedly in the interviews. Put simply too odd and they will not work, to strange and the designs will not engage the user. The work produced – be it a lone object or an object contextualised by an extrinsic narrative established through a film or some other medium – should always relate back to quotidian conditions. Good examples of critical design practice tap into users' familiar understanding of objects of use. They subvert the understanding between users and object, essentially exploiting the evocative characteristics of designed objects. This creates a dilemma of interpretation afforded by the contradiction, tension and juxtaposition of an object of use and the subversion of users' conventional understanding of how that object might be used. It is in this tension, dilemma of interpretation that questions are asks, and channels of discourse are opened. This function of critical design practice is useful when trying to develop an understanding of how the designers establish inquiry through design and frame the practice as research.

8.5 Research through critical design practice

The affective, relational character of the work produced opens channels of discourse on and around the object. Here objects of design are seen as conversation starters and positioned as discourse. Design used in this way works as part of a research process. Research in this sense sits in opposition to positivist research methods that aim towards presenting facts, which as often as they contribute to knowledge, close down avenues of inquiry. The ability to provoke discussion on an object, to engage a public around the object has an instrumental application in the research context. This function of critical design practice is supported by Galloway (2007) who describes that a combination of highly situated ethics and aesthetics delivered through critical design allows for greater critical manoeuvrability. In this context, the designs work as design probes. They offer means to visualise science, comment on societal concerns and constitute publics around

the objects. Galloway also outlines how critical design practice might function as part of a research process:

> Since facts seem to end debates, and design seems to open them up, our greatest chance for critical intervention arise in our engagement of shared concerns – even if that means we cannot solve a problem. (Galloway, 2007)

8.6 'Critical' in critical design practice

Where this dilemma of interpretation is established using 'ambiguity,' 'design fictions' and 'strangely familiar' objects, through methods commonly associated with art practice, it is all too easy to see the work as something other than product design. Because of these characteristics, it was argued in chapter four that examples of critical design practice are often subject to art discourse, critique and gallery circulation. Addressing this, it was argued that that, the assertion made by the designers, that the work *is* design, *is* important. Considering this assertion, the chapter introduced what 'critical' in critical design practice is taken to mean in this thesis.

The power of critical design practice lies in its objects being seen as product design. While notably dissident in character, the refusal to abandon the product design discipline through the application of design language, methods and principles, offers a valuable contribution to the discipline. The critique of the discipline through the subversion of disciplinary traditions, adds a new practice of values. This fits with Foucault's concept of critique where, critique is a practice that not only suspends judgement but offers a new practice of values based on that very suspension. (2002, p. xx)

In establishing this critique, the designers aim to extend the purview of the discipline and what product design is capable of addressing beyond fiscal and technological drivers. Product design is pushed to address contemporary social and scientific concerns. In this context, the designers share the belief that product design is more than a profession, more than an agent of capital but a powerful medium, language and process through which to make comment and engage inquiry.

This suspension of conventional market, user and technologically driven values paradoxically adds value and defines 'critical' in critical design practice. Because of this, critical design practice has an agonistic relationship to orthodox product design, a

relationship based on subversion and advocacy, but underpinning this, respect and concern.

8.7 Inviting a design focused analysis

The review documented through chapters two and four, identified how as a method, strategy, or theoretical perspective, critical design has been widely interpreted. It has shown how it has been appropriated – in an increasing number of student projects and adopted by many trying to find a label for what they do. With this has come a sporadic analysis of the field that often discusses the work with reference to its proximity to art practice.

The discussion in chapter four identified the criticism of critical design practice and the barriers that exist to seeing critical design practice as product design. It introduced evidence – anecdotal, experiential and published – that there is a limited analysis of critical design practice in design studies. This research contributes to this gap in knowledge and addresses the lack of analysis.

The discussion questioned the analyses of the practice that often comes from exhibition and curation perspectives. In this context appraisal can be accused of being unrepresentative and affirmative. This was exemplified in Antonelli's account of Catts and Zurr's work during 'Design and the elastic mind', which was astutely challenged by Cogdell (2009) in her Design Issues review of the exhibition. The discussion revealed how dominant criticism and analysis of critical design is often grounded in perspectives rooted in art and visual culture discourses.

The focus here set up one of the main arguments made in this thesis. It stated the danger of critical design practice being seen as a form or quasi art or as a form of design entertainment enjoyed for its humour or novelty rather than for its insight, a concern also shared by Raby (2008). The argument made here stated that critical design practice needs to avoid a situation where it is seen as quasi art or simply limited to a form of entertainment by inviting commentary and critique of the practice, from within design studies discourse and from a perspective of design research.

The first thing to address in aiming to establish this design centric analysis, were the barriers that exist to seeing critical design as a form of product design. Most clearly, this was the question of critical design practice's proximity to art. Even the most open-minded design professionals and researchers question if critical design's operation as

product design, because it does not serve to solve problems through highly resolved objects or innovative systems design. Considering the "isn't it just art" question, a concept of function based on optimisation and efficiency was identified as the measure used by many to differentiate between objects of art and design.

In an attempt to move the discussion away from the 'art question' the common perception of function, or more accurately 'practical functionality,' was challenged and a concept of function conceived beyond efficiency and optimisation presented. The discussion here drew on literature from design theory but also from other disciplines that engage with objects, form and materiality.

The discussion showed how Archaeologists' have an interesting and useful take when attempting to reconceptualise function. Ligo (1984) and Schiffer (1992) extend function beyond efficiency into more social and even existential contexts. Material culture perspectives also contributed. Miller (1983) was again useful in his call calls to think about a more open interpretation and the sociological perspective brought current thinking on practice-orientated design into play. (Shove, Watson, & Ingram, 2007)

Just as these sociological perspectives supported the relationality of function, the discussion identified designers and scholars who advocate a socially constructed and dynamic function of, and for objects. The discussion showed how Brandes, Stich and Wender (2009), Kroes (2010) and Fisher and Shipton (2010) suggest forms of use that, despite designer's intent, function will always emerge in use. This perspective is shared by Mazé (2007) in her thesis exploring the 'temporal form of interaction,' Wilkie (2010) in his 'user assemblages' and Niedderer (2004; 2006) in her category of the 'performative object'.

The discussion located how function is understood in this thesis. It showed that an objects function is open to the interpretation by the user and the intention of the designer. In short, function is an ill-defined and open concept; it extends beyond optimisation and efficiency into social existential and cultural contexts, and therefore it provides insufficient grounds to cast critical design practice into art discourse. This is relevant in a context of critical design practice because if both user and designer are willing to see the object as a functioning design object, then the object does function as an object of design and should be discussed as such.

8.8 Rhetorical use

This excursion into the discourse on function was useful because it established that critical design practice operates through a system of 'rhetorical use'. Rhetorical use was introduced as a form of symbolic and intellectual use. This use is afforded through the designer's projection of the object in material form, and imagination on part of the user. Rhetorical use is just as legitimate as practical use.

Accepting rhetorical use as a legitimate form of use counters arguments based on the claim that critical design is not useful and it does not function. There is more to the function of designed objects than just practical considerations. This proposition challenges the reader to overcome modernist doctrine inherent in 'form follows function' and by doing this, overcome one of the biggest barriers to seeing and talking about critical design as product design.

An open concept of function and use, as advocated by those cited above shifts focus beyond aesthetic questions. It opens critical design practice up to a more design centric analysis. An analysis where questions can be asked of the object, which orient around contexts and systems of use, the practices that might situate the object, or the behaviours that might emerge as a result of engaging with, and using the critical design object.

8.9 Facilitating discussion

The argument made in chapter four outlined the need for apparatus to facilitate discussion into critical design practice. The premise here is that models make sense of things. A model of the practice that illustrates its position in relation to other forms of design practice and places in a disciplinary context, developed from a design research perspective might engage a boarder design studies community in a discussion of the practice and by extension advance the theoretical foundation of the practice.

The discussion outlined studies carried out in this vain. Sanders (2006), 'evolving map of design research and practice' places critical design in a design research context, Walkers (2010) positioning of critical design as 'fundamental research' and Bowens (2009) 'critical design methodology' showed how critical design functions as research in a design process and as a means of ideation. A more rhizomic model of the field and its reach was identified in Design Act (2009). Mazé positioned critical design practice amongst examples of socially responsible design practice, participatory design and co-

design, practices that are political by nature and orientate around active critical participation.

Essentially this review identified how this study sits amongst these praxiologies. In many ways, the taxonomy shares a similar aim to Design Act, in that the project operates through a process of identifying, categorising and presenting examples of critical design practice. Like Sanders and Walkers work, the taxonomy functions as a tool to model and understand the practice. In this sense, Fallman's (2008) 'Triangle of interaction design research' was particularly useful. Fallman's use of plotting projects and mapping trajectories informs the use of the taxonomic space to analyse projects as illustrated in Figures 7.26-7.30. However, this research and the design of the taxonomy are distinctly different from Fallman's model. The taxonomy is specifically focused on critical design practice. The taxonomy is also different in how it structured through the specific use of ambiguity, satire and narrative methods. The taxonomy focuses the area that Fallman describes as "Exploratory design." (2008, pp. 7-8).

8.10 Design at users

Considering how others have explored and conceptualised critical design practice, the chapter introduced a characteristic of critical design practice that differentiates it from other forms of socially and politically engaged practices. There is a trend to discuss critical design alongside other forms of socially engaged participatory and co-design practices. (Bülmann, 2008; Sanders & Stappers, 2008; Design Act, 2009), It has been argued in the thesis that critical design practice differs from these in that it functions as an authoritative form of product design. It was argued in chapter four that the 'critical' designer performs as author and critic, and although this has changed slightly in Speculative Design practice – where designers frequently collaborate with experts in scientific contexts – there remains an authorship over the work and often a signature in the work.

Considering this, critical design practice can be described as 'design at' users. Commentary is directed at a user or stakeholder group, the designer establishes a position as a means to address and provoke discussion.

Such a view of the field differentiates it from other forms of socially responsible or responsive forms of design practice, participatory or co-design, which are characterised by the redistribution of power in making design decisions from the designer to the

stakeholder users. I recognise here however, that these practices are also critical of prevailing orthodoxy and are having deterritorialising effects on the role of the designer and what constitutes product design practice today.

8.11 Methodology

The contextual review established that no other academic study *into* critical design practice has engaged with a range of expert critical designers in the way that this research has. In this respect, this study presents an original contribution to design research. The study unique in this sense, as it engages with a range of expert critical designers. It contributes to the contextual, historical and theoretical aspects of critical design practice. The study is a hermeneutic study of practice (praxiology). From a practical perspective (Laverty, 2003; Rubin & Rubin, 2005; Klein & Myers, 1999; Jones P. , 2000) grounded the interview approach, interpretive principles and analysis. From a more theoretical perspective (Gadamer, 1998; Caputo J. D., 1987) provided epistemological and ontological grounding i.e. that facts are fluid and elusive, true and fundamental meaning cannot be achieved, and that a research should focus only on our observational claims.

In this, I recognise that the taxonomy presented does not constitute all critical design practice; it is developed from a subjective interpretation and through dialogical reasoning. The taxonomy is grounded in the evidence obtained from interview and from an extensive contextual review. It offers a reasoned account. The taxonomy in its visual and written dimension advances the concept of critical design practice. It differentiates Critical Design from other critical design practice and provides theoretical apparatus to analyse the field. This is exemplified in the applications of the taxonomy shown in Figures 7.26-7.30.

8.12 Multiple perspectives

This thesis is the first in design studies to present a range of expert 'critical' designers' perspectives alongside each other. In support of the aim and the argument that there is more to critical design than the colloquial understanding, the multiple perspectives presented in chapter five illustrate the range of topics that the critical designers engage with. The perspectives on critical design provide evidence of the variation of contexts engendered in the designer's work, values and theoretical perspectives and interests. The discussion showed how concerns range from disciplinary critique, social commentary and engagement in scientific discourses through design. Through the analysis, these perspectives ultimately lead to developing definitions for Associative Design (disciplinary), Speculative (science) and Critical (social political commentary).

The 'perspectives on critical design' provide insight into the mechanisms used by the designers i.e. their ability to raise questions and engage through humour and satire aiming to embed defamiliarising effects in the objects they produce, but at the same time, honour design principles.

The designers' perspectives showed some of the difficulties faced by critical design practice i.e. repetition in practice and shallow representation of critical design work and the challenge to sustain the non-commercial forms of design practice through institutional relationships, research funding and pedagogical activity. The chapter essentially documented the empirical evidence for analysis. It forced a close reading of the transcript and informed the initial coding structures that were applied in the analysis.

8.13 Salience through dialogical reasoning

The analysis identified salience in the interviews. Four salient concepts were identified through a process of abstraction and generalisation.

Engendered contexts: discipline, science and society. The findings here pointed to *what* the designers address through design. This concept provided grounds to subcategorise critical design practice into three types of practice. To reiterate, they focus on discipline – later used to inform the category of Associative Deign, science – later used to inform the category of Speculative Design and social cultural concerns – later used to inform the category of Critical Design.

Satiric design was identified as salient and is useful because as a concept it addresses questions about *how* critical design is done. Notably, critical design practice functions through the marriage of design principles and satire. Inseparable from any definition of satire is critique and corrective purpose, expressed through a critical mode that ridicules or otherwise challenges conditions needing reformation in the opinion of the satirist. Satire and criticality are concurrent in critical design practice and therefore critical design practice is orientated around corrective purpose.

Context and facilitation was identified as salient. As a concept, it provides insight into questions of *where* critical design is done. Academic design research, the gallery system and various studio practices were identified as contexts that facilitate the practice. The findings identified how funding is salient and the emphasis on the pragmatics of sustaining a non-commercial practice by operating in an academic or educational context. It also revealed how the practice is closely linked to pedagogic activity. These spaces provide the freedom from the restraints imposed by industry and produce another form of capital, epistemic and human capital. This illustrated the importance of the institution to the practice. To an extent, the institutional links add certain credibility to the practice as an academic form of inquiry.

Function distribution and dissemination was identified as salient. As a concept, it provides insight into *why* the designers practice. The function was identified as, 'to challenge', 'debate' and 'inquire' through design. Just as the emphasis was on the affective and provocative character of the work produced, dissemination and engagement were emphasised i.e. the work must disseminate and it must engage its user and audience for it to work. Critical design is not carried out for its own sake and always carried out with a specific context and user in mind.

This concept pointed to another form of consumption and mirrors the changing way that design is consumed. The consumption of objects and services today is not limited to physical exchange. Forums, workshops and gallery dissemination open up for another form of use and consumption. Again, this mirrors the shift from product design that orientates around the highly resolved object and creates a space for a more relational from of design practice. Referring back to the contextual review, objects delivered as an affective medium, objects as inter-subjective media and object as 'things' around which things happen and matters of concerns voiced and addressed.

The salient concepts identified from the analysis go some way to address the research questions. The analysis identified the focus of critique and the contexts engendered in the design work. It illustrated where and in what contexts the critical designers operate. Identifying satiric design revealed what methods and tactics the designers' use. Finally, the values coding identified why the designers are working in this way.

Most importantly, the analysis was used to inform the taxonomic model. Each of the concepts identified were theorised with reference to literature through a process of deductive reasoning as a means to create the taxonomy. *Engendered contexts* were abstracted and Associative Design (disciplinary focus), Speculative Design (science and technology) and Critical design (social commentary, socio-cultural focus) were defined. Satire, Narrative and Object rationality were identified as methods of classification from *Satiric design*. These ground the structure of a taxonomic space. *Context and facilitation* informed where the practice is carried out. The taxonomic space supplemented by the definitions outlined in chapter seven provides apparatus by which to plot examples of critical design practice, to chart activity, map individual trajectories of practice, compare, and contrast designers' activities.

The taxonomy addresses another research question by providing the apparatus to engage with critical design practice. Although this taxonomy is one interpretation, it reveals diversity in critical design practice and shows the methods used. The taxonomy forms this project's unique contribution to knowledge. The concluding part of this research details the contribution, why it is useful and what might come from it.

8.14 Contribution to knowledge

The contribution of this research is a *Taxonomy of critical practice in product design.* The taxonomy functions as a discursive tool providing apparatus to model the field. It provides a set of definitions and a framework to discuss examples of practice alongside each other.

The taxonomy illustrates diversity in critical design practice. Its shows how critical design practice constitutes three types of practice: Associative, Critical and Speculative Design. Critical Design has been placed in a larger context of critical design practice. It has a history in Associative Design and a future in Speculative Design. All three forms of practice exist today in contemporary product design practice.

Through examples and the analysis, the research has shown where critical design happens and in what contexts; in education, academic design research, in practitioner initiated projects, and para-academic contexts.

The research has shown the methods used. It has outlined the instrumental use of ambiguous design proposals to engage the user through humour and establish a critique through a satiric form of design practice. All three categories of practice function as type of Satiric Design.

The type of satire employed in a project differentiates the three categories of practice presented in the taxonomy. The research has shown how Associative Design works through horatian forms of satire e.g., using mechanisms of parody. Speculative Design works through horatian and juvenalian satire and works e.g. through exaggeration and distortion. Critical design works through juvenalian satire e.g. established through mechanisms of obscenity and antithesis.

Satire relates to the type of ambiguity in the design work. Examples of Associative Design work through the subversion of associated meaning through a form or relational ambiguity. Speculative Design works through ambiguity of information and Critical design through relational ambiguity. The type of ambiguity designed into the work differentiates the three types of practice.

The taxonomy contextualises critical design practice in three ways. First, it is used to show the contexts engendered in the practice (project focus: disciplinary, science and technology, or socio-cultural). Second, it shows where a project is carried out (the

operating context). Third, It shows how the practice operates through satire and methods used to establish a critical narrative through design.

By discussing key theoretical concepts that inform critical design, defining categories of practice, design methods and contexts of operation and structuring them into a taxonomic space, the taxonomy offers theoretical apparatus to engage with the field. It provides designers a territory to operate from and observers of the practice a territory to analyse and critique. The intention of this research is that such a framework allows more people to engage with the practice. The taxonomy in its visual dimension supported by the written account provides the means for designers, design researchers and theorists who might have otherwise been reserved to engage with the discussion on the practice to engage with the practice or at least with my interpretation of the practice as it has been presented and outlined in this thesis.

8.15 Implications

Throughout I have said how the taxonomy provides the apparatus to engage a more design centric audience in the discussion on critical design on the premise that theoretical apparatus will allow a broader design studies readership to engage with the practice to challenge it and discuss it. For theories to develop and practices to become legitimised as part of a disciplinary core, the field needs to be cleared of ambiguous understanding. The logical next step is to apply and disseminate the model more broadly than it already has been.

To date the taxonomy has been disseminated and used at a series of workshops and conferences providing grounds for discussion in sessions at the Design Research Society, Design and complexity conference in Montreal 2010, and introduced at the Design History Society conference on Design activism and social change in Barcelona 2011. The taxonomy has been well received, feedback has been positive and it has provoked discussion at these events. Additionally the model has been shown to the designers who took part in the interviews and they have fed back the usefulness in activity that attempts to theorise the field. Some have engaged with it to position their work, others questioned the conceptualisation. There is now scope to formalise the feedback to further disseminate and test the model. It will be interesting to see how different types of design scholars use the model. From its dissemination, so far I have already seen how historians, theorists and practitioners might see different value and usefulness in the framework.

Another application of the model might be as a teaching and mapping tool in order to articulate what has been done in critical design practice, how the practice operates and what critical design projects address or focus on. It offers a means for students to study and profile the field. It might also offer a means to structure or direct a student practitioner's approach in the context of developing an understanding of where they might take their practice, the methods they might want to employ. However, just as usefully it might offer them a terrain to react to and a conceptualisation to challenge.

8.16 Some final reflections

Through this thesis, I have hoped to illustrate that this is an important form of design practice, capable of inquiry, commentary, debate and provocation in social, scientific and disciplinary matters of concern. I have hoped to articulate that this field warrants analysis in order to develop and make a valuable contribution to product design. I have hoped to provide theoretical apparatus by which to engage an audience in the discourse on critical design practice by offering a gate of entry into its discourse.

Developing the terminology and laying down precise definitions fixes specific points around which the practice can be discussed. The premise here is that to develop the practice more people from outside critical design need to engage and challenge it. This thesis is not written for the gallery audience, the advocates of critical design practice or the tightknit community of practitioners, but those who have little understanding of the practice or those who want to critique and question the field.

Without wanting to introduce new material at this late stage in the conclusion, in the month that this thesis was submitted for examination an online symposium was held by the German based Design Research Network, the title of which was 'Before and After Critical Design' (Design Reserach Network, 2011). The daylong event attracted international attention of those who engage with, or in, critical design practice. Ramia Mazé, Simon Bowen, Tobie Kerridge, Alex Wilkie, Carl DiSalvo all of who's insight has contributed to this research at some point convened sessions.

The forum would have been more interesting, engaging and useful if delegates from outside the practice contributed. It would have been more useful if those who know and advocate the practice were challenged to defend it in order to advance it. The call made here is to challenge and critique critical design, and to question how it might adapt to remain meaningful. Such engagement will add value to critical design practice and by extension, add value to the theoretical foundation of the product design discipline.

9 References

Adorno, T. (1965). Functionalism Today. Originally Presented At The German Werkbund, Berlin, October 23 1965. *Oppositions,* 17, 30-41.

Adorno, T. & Horkheimer, M. (2010). *Dialectic of Enlightenment.* London: Verso

Agre, P. (1997). *Computation and Human Experience.* Cambridge: Cambridge University Press.

Almquist, J., & Lupton, J. (2010). Affording Meaning: Design-Oriented Research from the Humanities and Social Sciences. *Design Issues,* 26 (1), 3-14.

Ambaza, E. (Ed.). (1972). *Italy: The New Domestic Landscape, Achievements and Problems of Italian Design.* New York: Museum of Modern Art.

Antonelli, P. (2010). Fresh as a Daisy: Alexandra Daisy Ginsberg. *Nature Medicine*, 16 (9), 942.

Archer, B. (1995). The Nature of Research. *Co-Design: Interdisciplinary Journal of Design,* 2, pp 6-13.

Auger, J. (2010). Alternative Presents and Speculative Futures. *6th Swiss Design Network Conference 2010 Design Fictions Negotiating Futures,* (pp. 42-57). Basel Switzerland.

Auger, J., Swan, L., & Taylor, A. (2010). Speculative Design by Practice - A Robot Case Study. *European Association for the Study of Science and Technology (EASST) conference.* Trento Italy.

Bagha, M., Coley, S., & White, D. (2000). *The Alchemy of Growth.* New York: Perseus Publishing.

Baird, G. (2004). Criticality and Its Discontents. *Harvard Design Magazine*, 1-6.

Bakker, G., & Ramakers, R. (1998). *Droog Design: Spirit of the Nineties.* Rotterdam: 010.

Ball, R., & Naylor, M. (2006). *Form Follows Idea: An Introduction to Design Poetics.* London: Black Dog Publishing.

Barthes, R. (2000). *Mythologies.* London: Vintage.

Baudrillard, J. (1981). *For a Critique of the Political Economy of the Sign.* St Louis, US: Telos Press.

Baudrillard, J. (1996). *The System of Objects.* London: Verso.

Beaver, J., Kerridge, T., & Pennington, S. (Eds.). (2009). *Material Beliefs.* London: Goldsmiths University of London Interaction Design Studio.

Betsky, A. (2003). The Strangeness of The Familiar in Design. In A. Blauvelt (Ed.), *Strangely Familiar: Design and Everyday Life* (pp. 14-37). Minneapolis, MN: Walker Art Center.

Bijker, W. (1995). *Of Bicycles, Bakelites, and Bulbs: Towards a Theory of Sociotechnical Change.* Cambridge, MA: MIT Press.

Bijker, W., & Law, J. (Eds.). (1994). *Shaping Technology / Building Society: Studies in Sociotechnical Change.* Cambridge, MA: MIT Press.

Billing, J., & Cordingley, T. (2006). *Some Kind of Analogtivity: Anti Simulation Through Design.* Personal and Ubiquitous Computing, 10 (2-3), 101-105.

Blauvelt, A. (2008, 03 11). *Towards Relational Design.* Retrieved 09 15, 2010, from The Design Observer Group: http://observatory.designobserver.com/entry.html?entry=7557

Bleecker, J. (2010). Design Fiction: from props to prototypes. 6th Swiss Design Network conference 2010 Design Fictions Negotiating Futures, (pp. 58-67). Basel Switzerland.

Bleecker, J. (2004). *The Reality Effect of Technoscience PhD Diss.* Santa Cruz: University of California.

Bleecker, J., & Nova, N. (2009). *A Synchronicity: Design Fictions for Asynchronous Urban Computing.* New York: The Architectural League of New York.

Boehner, K., Vertesi, J., Sengers, P., & Dourish, P. (2007). How HCI Interprets The Probes. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 1077 - 1086). San Jose CA: ACM.

Bonsiepe, G. (2007). The Uneasy Relationship between Design and Design Research. In R. Michel (Ed.), *Design Research Now* (pp. 25-39). Berlin: Birkhauser.

Bowen, S. (2009). A *Critical Artefact Methodology: Using Provocative Conceptual Designs to Foster Human-centred Innovation. PhD Diss.* Sheffield: Sheffield Hallam University.

Bowen, S. (2007). Crazy Ideas or Creative Probes?: Presenting Critical Artefacts to Stakeholders to Develop Innovative Product Ideas. *European Academy of Design 07: Dancing with Disorder: Design, Discourse and Disaster. Izmir, Turkey.*

Brand, S. (1988). *The Media Lab: Inventing the future at MIT.* New York: Penguin.

Brandes, U., Stich, S., & Wender, M. (2009). *Design By Use: The Everyday Metamorphosis Of Things.* Basel: Birkhauser.

Bredies, K., Jooste, G., & Chow, R. (2009). Designers and Users: Comparing Constructivist Design Approaches. *European Academy of Design 08: Design Connexity* (pp. 71-74). Aberdeen: Greys School of Art.

Broms, L., Bång, M., & Hjelm, S. I. (2008). Persuasive Engagement: Exploiting Lifestyle as a Driving Force to Promote Energy-Aware Use Patterns and Behaviours.

Undisciplined! Design Research Society Conference 2008 . Sheffield: Sheffield Hallam University.

Buchanan, R. (1995). Branzi's Dilemma: Design in Contemporary Culture. In S. Vihma (Ed.*), Design: Pleasure or Responsibility?* Helsinki: University of Art and Design Helsinki.

Buchanan, R. (1989). Declaration by Design: Rhetoric, Argument and Demonstration in Design Practice. In V. Margolin (Ed.), *Design Discourse* (pp. 91-109). Chicago, IL: University of Chicago Press.

Buchanan, R. (2001a). Design and the New Rhetoric: Productive Arts in the Philosophy of Culture. *Philosophy and Rhetoric 34* (3), 183-206.

Buchanan, R. (2001b). Human Dignity and Human Rights: Thoughts on the Principles of Human Centred Design. *Design Issues, 17* (3), 35-39.

Bülmann, V. (2008). Pseudopodia Prolegomena to a Discourse on Design. In V. Bülmann, & M. Wiedmer (Eds.), Pre-Specifics: *Some Comparativistic Investigations on Research in Design and Art* (pp. 21-79). Zurich: JRP Ringer.

Burkhardt, F. (1988). Design and Avant-Postmodernism. In J. Thackara (Ed.), *Design After Modernism* (pp. 145-151). London: Thames and Hudson.

Butler, J. (2002). What Is Critique? An Essay on Foucault's Virtue. In D. Ingram (Ed.), The Political: *Readings in Continental Philosophy*, (pp. 212-228). London: Basil: Blackwell.

Caccavale, E. (2010). *Future Families: A Practice Based Research Project To Explore Social, Cultural and Ethical Issues Surrounding Reproductive Technologies and New Family Forms.* Retrieved 09 15, 2010, from www.rca.ac.uk: http://www.rca.ac.uk/Default.aspx?ContentID=502274&GroupID=502271&Contentwithinthissection&More=1

Calhoun, C., (1995). *Critical Social Theory: Culture, History and the Challenge of Difference.* London: Blackwell.

Caputo, J. D. (2000). *More Radical Hermeneutics: On Not Knowing Who We Are.* Bloomington, IN: Indiana University Press.

Caputo, J. D. (1987). *Radical Hermeneutics Repetition, Deconstruction, and the Hermeneutic Project.* Bloomington: Indiana University Press.

Charmaz, K. (2006). *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*. London: Sage.

Cogdell, C. (2009). Design and the Elastic Mind Museum of Modern Art (Spring 2008). *Design Issues, 25* (3), 92-101.

Coles, A. (2002). Art Décor: art's romance with design. *Art Monthly* , 253.

Coles, A. (2005). *DesignArt*. London: Tate Publishing.

Coles, A. (Ed.). (2007). *Design and Art*. Cambridge MA: MIT Press.

Connery, B. A., & Combe, K. (Eds.). (1996). *Theorizing Satire: Essays in Criticism and Theory*. Palgrave Macmillan: Palgrave Macmillan.

Coyne, R. (2005). Wicked Problems Revisited. *Design Studies, 26* (1), 5-17.

Crampton Smith, G. (1997). Computer Related Design at The RCA: 1997 Graduation Projects. *Interactions, 4* (6), 27-33.

Crampton Smith, G. (1994). The Art of Interaction. In L. MacDonald, & J. Vince (Eds.), *Interacting with Virtual Environments*. Hoboken, NJ: John Wiely & Sons.

Crampton Smith, G., & Tabor, P. (1996). The Role of the Artist Designer. In T. Winograd (Ed.), *Bringing Design to Software* (pp. 35-57). Reading, MA: Addison Wesley.

Crisp, D. G. (2009). Discourse This! Designers and Alternative Critical Writing. *Design and Culture , 1* (1), 105-120.

Critical Art Ensemble (2009). Retrieved11 23, 2010, from http://www.critical-art.net.

Cross, N. (2001). Achieving Pleasure from Purpose: The Methods of Kenneth Grange Product Designer. *The Design Journal, 4* (1), 48-58.

Cross, N. (2002). Creative Cognition in Design: Processes of Exceptional Designers. In T. Hewett, & T. Kavanah (Eds.), *Creativity and Cognition* (pp. 14-19). New York: ACM Press.

Cross, N. (2006). *Designerly Ways of Knowing*. London: Springer Verlag Ltd.

Cross, N. (2007). From a Design Science to a Design Discipline: Understanding Designerly Ways Of Knowing. In R. Michel (Ed.), *Design Research Now. Essays and selected projects* (pp. 41-54). Basel/Boston/Berlin: Birkhäuser Verlag AG.

Cross, N., & Clayburn Cross, A. (1996). Winning by Design the Methods of Gordon Murray, racing car driver. *Design Studies, 17* (1), 91-107.

Design Act. (2009). Retrieved 08 25, 2011, from Design Act: Socially and Politically Engaged Design Today- Critical Roles and Emerging Tactics.

Design and the Elastic Mind. (2008). Design and the Elastic Mind MOMA. Retrieved 09 26, 2011, from http://www.moma.org/interactives/exhibitions/2008/elasticmind/

Design Research Network. (2011, 09 02). *Before and After Critical Design*. Retrieved 09 04, 2011, from Design Research Network: http://www.designresearchnetwork.org/drn/content/feature-discussion%3A-and-after-critical-design

Dialogues in Design: Design as a Medium. (2010, 03 02). Retrieved 09 16, 2011, from RCA and V&A History of design Dialogues in design: http://dialoguesindesign.wordpress.com/2010/02/16/next-session-design-as-a-medium-tuesday-2nd-march/

DiSalvo, C. (2009). Design and the Construction of Publics. *Design Studies, 25* (1), 48-63.

DiSalvo, C. (2012). *Adversarial Design.* Cambridge: MIT Press

Dormer, P. (1990). *The Meanings of Modern Design*. London: Thames & Hudson.

Dubberly, H. (2004). *How Do You Design? A Compendium of Models*. Retrieved 09 23, 2011, from www.dubberly.com: http://www.dubberly.com/articles/how-do-you-design.html

Dunne, A. (1997). *'Hertzian Tales': An Investigation Into The Critical Potential Of Electronic Product as a Post-Optimal Object. PhD Dis*. London: RCA.

Dunne, A. (1998). *'Hertzian Tales': Electronic Products, Aesthetic Experience and Critical Design*. London: RCA Computer Related Design Research Publications.

Dunne, A. (2010). Revitalizing Design: Revital Cohen. *Nature Medicine , 16* (9), 944.

Dunne, A., & Raby, F. (2008). *A/B*. Retrieved August 3, 2010, from www.dunneandraby.com.

Dunne, A., & Raby, F. (2003). *Consuming Monsters: Big, Perfect, Infectious*. London: Unpublished.

Dunne, A., & Raby, F. (2001). *Design Noir: The Secret Life of Electronic Objects*. London: August/Birkhauser.

Dunne, A., & Raby, F. (2002). The Placebo Project. *DIS '02: Proceedings of the 4th Conference On Designing Interactive Systems: Processes, Practices, Methods, And Techniques* (pp. 11-14). ACM Press.

Dunne, A., Cohen, R., & Wang, A. (Eds.). (2008). *Index Design Interactions*. London: RCA.

Dunne, A., Raby, F. (Designers), & Toran, N. (Director). (2007). *All the Robots* [Film].

Ericson, M., & Mazé, R. (Eds.). (2011). Design Act Socially and Politically Engaged Design Today: Critical Roles and Emerging Tactics. Stockholm: Sternberg Press.

ESPRC, RCA, NESTA. (2010). *Impact Exhibition*. Retrieved 11 20, 2010, from Engineering and Physical Sciences Research Council: http://www.epsrc.ac.uk/newsevents/events/impactexhibition/Pages/default.aspx

Fallman, D. (2003). Design-oriented Human-Computer Interaction. *CHI Letters , 5* (1), 225-232.

Fallman, D. (2008). The Interaction Design Research Triangle of Design Practice, Design Studies, and Design Exploration. *Design Studies, 24* (3), 4-18.

Feenberg, A. (1999). *Questioning Technology*. London: Routledge.

Feenberg, A. (2002). *Transforming Technology a Critical Theory Revisited*. New York: Oxford University Press.

Findeli, A. (1998). A Quest for Credibility: Doctoral Education in Design at the University Of Montreal. *Doctoral Education in Design*, (pp. 8-11). Ohio.

Findeli, A., & Bousbaci, R. (2005). The Eclipse of the Object in Design Project Theories. *The Design Journal , 8* (3), 35-49.

Findelli, A. (2008). Research Trough Design and Transdisciplinarity: A Tentative Contribution to the Methodology of Design Research. *Proceedings of Swiss Design Network Symposium. Berne Switzerland.*

Fischer, M. (2006). Science Technology and Society. In M. Featherstone, V. Couze, R. Bishop, & J. Phillips (Eds.), *Theory Culture and Society: Problematizing Global Knowledge* (Vol. 23, pp. 172-174). London: Sage.

Fisher, T., & Shipton, J. (2010). *Designing for Re-use*. London: Earthscan.

Floyd, C. (2005). Being Critical In, On or Around Computing. *Proceedings of the 4th Decennial conference on Critical Computing: Between Sense and Sensibility, Aarhus, Denmark, August 20-24, 2005* (pp. 207-211). New York: ACM.

Flusser, V. (1999). *The Shape of Things: A Philosophy of Design*. London: Reaktion Books.

Forlizzi, J., Stolterman, E., & Zimmerman, J. (2009). From Design Research to Theory: Evidence of a Maturing Field. *Proceedings of the International Association of Societies of Design Research. IASDR.*

Foucault, M. (2009). *The Archaeology of Knowledge*. London: Routledge.

Foucoult, M. (2002). What is Critique? In D. Ingram (Ed.), *The Political* (pp. 191-211). Oxford: Blackwell.

Franke, B. (2009). Design as a Medium for Inquiry . *Fifth Swiss Design Network Symposium, Multiple Ways to Design Research - Research Cases that Reshape the Design Discipline* (pp. 225-232). Swiss Design Network.

Frayling, C. (1993-4). Research in Art and Design. *Royal Collage of Art Research Papers, 1* (1), 1-5.

Friedman, K. (2003). Theory Construction in Design Research: Criteria: Approaches, And Methods. *Design Studies, 24*, 507–522.

Gadamer, H. G. (1998). *Truth and Method* (2 ed.). New York: Continuum.

Galloway, A. (2007, January 12-13). Design Research as Critical Practice. *Presented At The Carlton University Industrial Design 29th Annual Seminar. Ottawa, Canada* Retrieved 12 15, 2010 from http://www.purelipssquarejaw.org/papers/galoway_idseminar.pdf.

Gamman, L., & Thorpe, A. (Eds.). (2011). Socially Responsive Design. *CoDesign: International Journal of Co-creation in Design and the Arts.*

Gardien, P. (2006). *Breathing Life into Delicate Ideas, Position Paper Philips Design*. Retrieved 12 15, 2010, from Philips Design: http://www.design.philips.com/shared/assets/design_assets/downloads/news/Breathing_life_into_delicate_ideas.pdf

Gaver, W., & Dunne, A. (1997). The Pillow: Artist Designers in the Digital Age. *CHI '97 Extended Abstracts on Human Factors in Computing Systems: Looking To The Future*. ACM.

Gaver, W., & Martin, H. (2000). Alternatives: Exploring Information Appliances through Conceptual Design Proposals. *Human Factors in Computing Systems (CHI)* (pp. 209-216). New York: ACM Press.

Gaver, W., Beaver, J., & Benford, S. (2003). Ambiguity As A Resource For Design. *Conference on Human Factors in Computing Systems (CHI)* (pp. 233-240). New York: ACM Press.

Gaver, W., Boucher, A., Bowers, J., Kerridge, T, Cameron, D., Wilkie, Alex & Phillips, R. (2010). The Photostroller. London: Interaction Research Studio Goldsmiths University of London.

Geertz, C. N. (1973). *The Interpretation of Cultures*. New York: Basic Books.

Ginsberg, A. D. (2010). The Synthetic Kingdom. *Second Nature: International Journal of Creative Media, 2* (1), 266-284.

Glaser, B., & Strauss, A. (1967). The Discovery of Grounded Theory: Strategies for Qualitative Research. London: Sage

Grand, S. (2010). Research as Design: Future Perspectives. In W. Jonas, S. Grand, & R. Michel (Eds.), *The Future of Design Research.* Basel/Boston/Berlin: Birkhäuser Verlag AG.

Grand, S., & Wiedmer, M. (2010). Design Fiction: A Method Toolbox for Design Research in a Complex World. *Proceedings of Design and Complexity Design Research Society. Montréal: Ecol de Design Industrial. Univeritie de Montréal*

Green, J. (2007). *Democratizing the Future: Towards a new era of creativity and growth*. Retrieved February 16, 2011, from design.philips.com: http://www.design.philips.com/shared/assets/Downloadablefile/democratizing-the-future-14324.pdf

Greenhalgh, P. (1990). *Modernism in Design*. London: Reaktion Books.

Greff, JP. (Ed.) Contemporary Art Contemporary Design. (2008). *Proceedings of the Symposium AC | DC Contemporary Art Contemporary Design.* Geneva University of Art and Design. Geneva: JRP | Ringer.

Grey, C., & Malins, J. (2004). *Visualising Research: A Guide to the Research Process in Art and Design.* London: Ashgate.

Gromala, D. (1998). Abject Subjectivities. *American Centre for Design Journal: Remaking History* , 6–11.

Gromala, D., & Bolter, J. D. (2005). *Windows and Mirrors Interaction Design, Digital Art*,. Cambridge: MA.

Hällnas, L., & Redström, J. (2001). Slow Technology: Designing for Reflection. *Journal of Personal and Ubiquitous Computing , 5* (3), 201-212.

Hällnas, L., & Redström, J. (2002a). *From Use to Presence: On Expressions and Aesthetics of Everyday Computational Things. ACM Transactions on Computational Things*, 9-2, pp. 106-124.

Hällnas, L., & Redström, J. (2002b). *Abstract Information Appliances: Methodological Exercises in Conceptual Design of Computational Things. In Proceedings of the Conference on Designing Interactive Systems: Processes, Practices, Methods And Techniques* (pp. 105-116). New York: ACM Press.

Hayles, K. (2002). *Writing Machines*. Cambridge: MA: MIT Press Mediawork Pamphlet Series.

Hunt, J. (2003). Just Re-Do It: Tactical Formlessness and Everyday Consumption. In A. Blauvelt (Ed.), *Strangely Familiar: Design and Everyday Life* (pp. 56-71). Minneapolis: Walker Art Centre.

Hunt, J. (2011). Prototyping the Social: Temporality and Speculative Futures at the Intersection of Design and Culture. In A. J. Clarke (Ed.), *Design Anthropology: Object Culture in the 21st Century*. (pp. 33-44). New York: Springer Wien.

IDEO. (2011). Open IDEO. Retrieved 10 04, 2011, from Open IDEO: http://www.openideo.com/

Jeremijenko, N., & Thacker, E. (2004). *Creative Biotechnology*. Newcastle upon Tyne: Locus+ Publishing Ltd.

Jonas, W. (2007). Design Research and its Meaning to the Methodological Development of the Discipline. In R. Michel (Ed.), *Design Research Now* (pp. 187-205). Berlin: Birkhauser Verlag.

Jones, C., Wark, M., & Csikszentmihalyi, C. (2005). *Skin Control* . Charta/Location One .

Jones, P. (2000). *Embedded Values in Innovation Practice: Toward A Theory of Power And Participation In Organizations. PhD Dis.* Cincinnati: The Union Institute.

Julier, G. (2006). From Visual Culture to Design Culture. *Design Issues, 22* (1), 64-76.

Julier, G. (2000). *The Culture of Design*. London: Sage.

Kerridge, T. (2009). Does Speculative Design Contribute To The Engagement Of Science And Technology. *Multiple Pathways: Swiss Design Network Symposium.* Lugano Switzerland.

Kerridge, T. (2012) [forthcoming]. *Disentangling Speculative Design and Upstream Engagement PhD* dis. London : Goldsmiths University .

Kirby, D. (2010). The Future is Now: Diegetic Prototypes and the Role of Popular Films in Generating Real-world Technological Development. *Social Studies of Science, 40* (1), 41-70.

Klein, K. H., & Myers, M. D. (1999). A Set Of Principles For Conducting And Evaluating Interpretive Field Studies In Information Systems. *MIS Quarterly, 23* (1), 67-93.

Knorr Cetina, K. (1999). *Epistemic Cultures: How The Sciences Make Knowledge*. Cambridge: MIT Press.

Koskinen, I., Zimmerman, J., Binder, T., Redström, J., & Wensveen, S., (2011). *Design Research Through Practice. From the Lab, Field, and Showroom.* London: Morgan Kaufman.

Krippendorff, K. (2006). *Content Analysis: An Introduction to Its Methodology*. London: Sage.

Krippendorff, K. (2007). Design Research: an Oxymoron? In R. Michel (Ed.), *Design Research Now. Essays and Selected Projects* (pp. 67-80). Basel/Boston/Berlin: Birkhäuser Verlag AG.

Krippendorff, K. (2006). *The Semantic Turn: A New Foundation for Design*. London: Taylor & Francis.

Krippendorff, K., & Butter, R. (1993). Where Meanings Escape Functions. *Design Management Institute Journal , 4* (2), 30-37.

Kroes, P. (2010). Theories of Technical Functions: Function Ascriptions vs. Function Assignments Part 2. *Design Issues, 24* (4), 85-93.

Kvale, S. (1996). *Interviews: An Introduction to Qualitative Research*. Thousand Oaks, CA: Sage.

Lang, P., & Menking, W. (2003). *Superstudio: Life Without Objects*. Milan: Skira Editore.

Latour, B. (2009). A Cautious Prometheus? A Few Steps towards a Philosophy of Design (With Special Attention to Peter Sloterdijk). In J. Glynne, F. Hackney, & V. Minton (Ed.), *Networks of Design: Proceedings of the 2008 Annual Conference of the Design History Society (UK)* (pp. 2-10). Online: Universal Publishers.

Latour, B. (1993). *We Have Never Been Modern*. Cambridge: Harvard University Press.

Laverty, S. M. (2003). Hermeneutic Phenomenology and Phenomenology: A Comparison of Historical and Methodological Considerations. *International Journal of Qualitative Methods , 2* (3).

Leiblich, A. (1998). *Narrative Research: Reading, Analysis and Interpretation*. Thousand Oaks: Sage.

Lemoine, P. (1988). The Demise of Classic Rationality. In J. Thackara (Ed.), *Design After Modernism* (pp. 187-196). London: Thames and Hudson.

Ligo, L. L. (1984). *The Concept of Function in Twentieth-Century Architectural Criticism*. Ann Arbor Michigan: UMI Research Press.

Löwgren, J., & Stolterman, E. (2007). *Thoughtful Interaction Design: A Design Perspective on Information Technology*. Cambridge: MIT Press.

Malpass, M. (2009). Contextualising Critical Design: A Classification of Critical Practice in Product Design. *Proceedings of European Academy Design Conference 08 Design Connexity .Aberdeen: Greys School of Art and Design*

Malpass, M. (2010). Perspectives on Critical Design: A Conversation with Ralph Ball and Maxine Naylor. *Proceedings of Design and Complexity Design Research Society. Montréal: Ecol de design industrial. Univeritie de Montréal.*

Malpass, M. (2011). Critical Design and a History of Marginalised Practice. *Design History Society Conference on Design Activism and Social Change. Barcelona.*

Mazé, R. (2007). *Occupying Time: Design, Technology, and the Form of Interaction*. Stockholm: Axl Books.

Mazé, R., & Redström, J. (2007). Difficult Forms: Critical Practices in Design and Research. P*roceedings of the Conference of the International Association of Societies of Design Research.* Hong Kong: IASDR.

Mermoz, G. (2006). The Designer as Author: Reading the City Of Signs - Istanbul. *Design Issues, 22* (2), 77-87.

Michael, M. (2012) "What Are We Busy Doing?": Engaging the Idiot. *Science, Technology, & Human Values 37(5),* 528-554

Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis* (2 ed.). London: Sage.

Miller, D. (1987). *Material Culture and Mass Consumption*. New York: Blackwell.

Miller, D. (2001). *Disciplinary Approaches to Consumption*. In D. Miller (Ed.), Consumption and critical concepts in the social sciences (pp. 1-4). London: Routledge

Moline, K. (2006). Authorship, Entrepreneurialism and Experimental Design: Visual Design Scholarship. *The Research Journal of the Australian Graphic Design Association, 2* (2), 57-66.

Moline, K. (2008). Counter-Forces in Experimental Design: H Edge and the Technological Dreams Series #1 (Robots). *Studies in Material Thinking, 1* (2), Retrieved February 16, 2011 from: www.materialthinking.org/volume-1-issue2.php.

Muller, M., Wildman, D., & White, E. (1993). Taxonomy of PD Practices: A Brief Practitioners Guide. *Communications of the ACM , 36* (4), 25-28.

Myerson, J., & Lee, Y. (2011). Designing For the People, With the People, and By the People. *Design History Society Conference on Design Activism and Social Change. Barcelona.*

Niedderer, K. (2006). Designing Mindful Interaction: The Category of Performative Object. *Design Issues, 23* (1), 3-17.

Niedderer, K. (2004). *Designing The Performative Object: A Study in Designing Mindful Interaction through Artefacts Phd Dis.* Falmouth: Faculty of Culture & Media Falmouth College of Arts.

Nieusma, D. (2004). Alternative Design Scholarship: Working Toward Appropriate Design. *Design Issues, 20* (3), 13-24.

Norman, D. (1998). *The Design of Everyday Things* (3 ed.). London: The MIT Press.

Palmer, J., & Dodson, M. (Eds.). (1996). *Design and Aesthetics*. London: Routledge.

Papanek, V. (1984). *Design for the Real World : Human Ecology and Social Change* (2 ed.). London: Thames and Hudson.

Polkinghorne, D. (1983). *Methodology for the Human Sciences: Systems of Inquiry*. Albany: State University of New York Press.

Pop Noir. (2005). Retrieved 8 14, 2010, from http://www.imj.org.il/eng/exhibitions/2005/design_for_thought/pop/popnoir.html

Potter, J., & Wetherall, M. (1994). Analysing Discourse. In A. Bryman, & R. Burgess (Eds.), *Analysing Qualitative Data* (pp. 47- 68). London: Routledge.

Potter, N. (2002). *What is a Designer: Things, Places And Messages*. London: Hyphen Press.

Poynor, R. (2008). All That is Graphic Melts into Air... Design Art and the Art of Design. P*roceedings of the Symposium AC|DC Contemporary Art Contemporary Design 26-27 October 2007* (pp. 34 - 45). Geneva: Geneva University of Art and Design.

Poyner, R. (2005). *Arts Little brother Icon 023 May*. Retrieved 10 22, 2009, from http://www.iconmagazine.co.uk/issues/023/essay.htm.

Poyner, R. (1999). Made in Britain: The Ambiguous Image. In N. Barley (Ed.), *Lost & Found: Critical Voices in New British Design*. London: The British Council.

Prina, D. (2008). Design as Conceptual Research and Political Instrument: Role And Legacy Of The Italian Radical Movement. *Networks of Design: Proceedings of the 2008 Annual International Conference of the Design History Society* (pp. 100-106). Falmouth: University College Falmouth.

Pullin, G. (2007). Social Mobiles and Speaking Chairs. *EAD 07 Dancing with Disorder: Design Discourse Disaster,* (pp. 726-731).

Pullin, G. (2010). Curating and Creating Design Collections From Social Mobiles to the Museum of Lost Interactions and Six Speaking Chairs. Design and Culture, 2 (3), 309-328.

Raby, F. (2008). Critical Design. In M. Erlhof, & T. Marshall (Eds.), *Design Dictionary: Perspectives on design terminology* (pp. 95-95). Boston: Birkhauser.

Ramakers. (2002). *Less + More*. Rotterdam: 010 Publishers

Ratto, M. (2011). Critical Making : conceptual and material studies in technology and social life. The Information Society, 27 (4), 252-260.

Redström, J. (2008). Aesthetic Concerns in Pervasive Information Systems. In P. E. Kourouthanassis, & G. M. Giaglis (Eds.), *Pervasive Information Systems: Advances in Management Information Systems* (pp. 197-209). New York: M.E.Sharpe.

Redström, J. (2006). Towards User Design? On the Shift from Object to User as the Subject of Design. *Design Studies, 27*, 123-39.

Rendell, J., Hill, J., Fraser, M., & Dorrian, M. (Eds.). (2007). *Critical Architecture*. New York: Routledge.

Richards, L., & Morse, J. M. (2007). *Readme first for a user's guide to qualitative methods* (2 ed.). London: Sage.

Rittel, H., & Webber, M. Dilemmas in a general theory of planning. Policy Sciences. (1973) 4, 155-169.

Robach, C. (2005). Critical Design: Forgotten History or Paradigm Shift. In L. Dencik, *Shift: Design as Usual-Or a New Rising?* (pp. 30-41). Stockholm: Arvinius.

Rubin, H., & Rubin, I. (2005). *Qualitative Interviewing: The Art of Hearing Data*. London: Sage.

Saldaña, J. (2003). *Longitudinal Qualitative Research: Analysing Change Through Time*. Walnut Creek CA: AltaMira Press.

Saldaña, J. (2009). *The Coding Manual for Qualitative Researchers*. London: Sage.

Sanders, E. (2006). Design Research Society. Design Research in 2006. Design *Research Quarterly, 1* (1).

Sanders, E., & Stappers, P. (2008). Co-Creation and the New Landscapes Of Design. *CoDesign: International Journal of Co-Creation in Design and the Arts, 4* (1), 5-18.

Schiffer, M. B. (1992). *Technological Perspectives on Behavioural Change*. Tuscan AZ: University of Arizona Press.

Schiffer, M. (1992). *The Material Life of Human Beings: Artefacts Behaviour and Communication*. London: Routledge.

Schön, D. (1983). *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic Books.

Seago, A., & Dunne, A. (1999). New Methods in Art and Design Research: The Object as Discourse. *Design Issues, 15* (2), 11-17.

Sengers, P. (2005). Reflective design. CC'05: *Proceedings of the 4th Decennial Conference on Critical Computing* (pp. 49-58). New York: ACM Press.

Sengers, P., McCarthy, J., & Dourish, P. (2006). Reflective HCI: Articulating an Agenda for Critical Practice. *The Conference on Human Factors in Computing Systems (CHI)* (pp. 1683-6). New York: ACM Press.

Shove, E., Watson, M., & Ingram, J. (2007). The Design of Everyday Life: Cultures of Consumption. London: Berg.

Simpson, P. (2003). On the Discourse of Satire: *Towards a Stylistic Model of Satirical Humour : Linguistic Approaches to Literature*. London: John Benjamin Publishers Company.

Simpson, P. (2004). *Stylistics: A resource book for students*. London: Routledge.

Singleton, B. (2009, 14 08). *Ten Years of Critical Design*. Retrieved 10 09, 2009, from Design Research Network: http://www.designresearchnetwork.org/drn/content/ten-years-critical-design

Snodgrass, A., & Coyne, R. (1997). Is Designing Hermeneutical? *Architectural Theory Review Journal of the Department of Architecture , 1* (1), 65-97.

Sterling, B. (2005). *Shaping Things*. Cambridge: MIT Press Mediawork Pamphlet Series.

Strauss, A., & Corbin, J. (1998). *Basics Of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. London: Sage.

STUDIOLAB. (2011). StudioLab a new European platform for creative interactions between art and science. Retrieved 08 09, 2011, from European Commission CORDIS: http://cordis.europa.eu/search/index.cfm?fuseaction=proj.document&PJ_LANG=EN&PJ_RCN=12114084&pid=3

Sullivan, L. H. (1896). The Tall Office Building Artistically Considered. *Lippincott's Monthly Magazine, LVII* .

Taylor, A., Anab, J., & Swan L., (2010). Natural Language processing 8, New companions. In. *Close Engagements with Artificial Companions: Key Social, Psychological, Ethical and Design Issues*. (pp 108-120). London: John Benjamins Publishing.

Toran, N. (Director). (2001). *Object For Lonely M*en [Film].

Toran, N. (Director). (2005). *Desire Management* [Film].

Toran, N., & Kular, O. (2009). *The MacGuffin Library*. Somerset House, London.[Performance Film and Rapid Prototyped objects].

Turkle, S. (Ed.) (2007). *Evocative Objects Things We Think With*. London: MIT Press.

Tharp, B., & Tharp, S. T. (2008). Discursive Design: Beyond Purely Commercial Notions of Industrial/Product Design. *IDSA National Education Symposium Proceedings*. Phoenix Arizona.

The Interactive Institute. (2004-05). Retrieved November 20, 2010, from Static: increasing energy awareness: http://www.tii.se/static/index.htm

The Interactive Institute. (2007). Switch. Retrieved November 20, 2010, from http://www.tii.se/switch

Tufte, E. (2001). *The Visual Display of Quantitative Information* (2 ed.). Cheshire, Connecticut: Graphics Press.

Van Manen, M. (1997). *Researching Lived Experience: Human Science for an Action Sensitive Pedagogy* (2 ed.). London: The Althouse Press.

Von Hippel, E. (2005). *Democratizing Innovation*. Cambridge: MIT Press.

Walker, S. (2006). *Sustainable by Design: Explorations in Theory and Practice*. London: Earthscan.

Walker, S. (2010). Wrapped Attention: Designing Products for Evolving Permanence and Enduring Meaning. *Design Issues, 26* (4), 94-108.

Wang, A. (2009). Asimov's First Law / Alarm Clocks. *Proceedings of the Third International Conference on Tangible and Embedded Interaction (TEI'09), Cambridge, UK* (pp. 31-34). ACM.

Ward, M., & Wilki, A. (2009). Made in Criticalland: Designing matters of concern. In J. Glynne, F. Hackney, & V. Minton (Ed.), *Networks of Design: Proceedings of the 2008 Annual Conference of the Design History Society (UK)* (pp. 118-124).

Warde, A. (2004). Practice and Field: Revising Bourdieusian Concepts. Centre for Research on Innovation and Competition Discussion (p. Paper 65). Department of Sociology, University of Manchester.

Weberman, D. (2000). A New Defence Of Gadamer's Hermeneutics. *Philosophy and Phenomenological Research , 60* (1), 45-65.

Whiteley, N. (1993). *Design for Society*. London: Reaktion Books.

Wiel, D. (1994). The Course for Change. In J. Myerson (Ed.). *Design Renaissance: Selected Papers from the International Design Congress Glasgow 1994*. London: Open Eye Publishing. (pp.119-125)

Wilkie, A. (2010). *User Assemblages in Design: An Ethnographic Study. London: Goldsmiths University of London. PhD Diss.*

Wilkie, A. (2011). Regimes of Design, Logics of Users. *Athenea Digital*, 11 (1), 317-334.

Wodiczko, K. (1999). *Critical Vehicles: Writings, Projects, Interviews*. Cambridge MA: The MIT Press.

Wolcott, H. (1994). *Transforming Qualitative Data: Description, Analysis and Interpretation*. London: Sage.

Yee, J. (2009). Capturing Tacit Knowledge: Documenting and Understanding Recent Methodological Innovation Used In Design Doctorates in order to Inform Postgraduate Training Provision. In K. Niedderer, L. Reilly, S. Roworth-Stokes, & C. Smith (Ed.), *International Conference 2009 of the DRS Special Interest Group on Experiential Knowledge (pp. 180-198)*. London: London Metropolitan University.

Yin, R. K. (2003). Case *Study Research: Design and Methods. Applied Social Research Methods Series.5* (3 ed.). London: Sage.

10 Appendix

a. Interpretive framework
b. Reasoning models
c. Code to theory model of inductive analysis
d. Inductive/deductive reasoning table: Coding- Categories- Sub-categories- Concepts- Taxonomic categories.

Appendix a: Interpretive framework

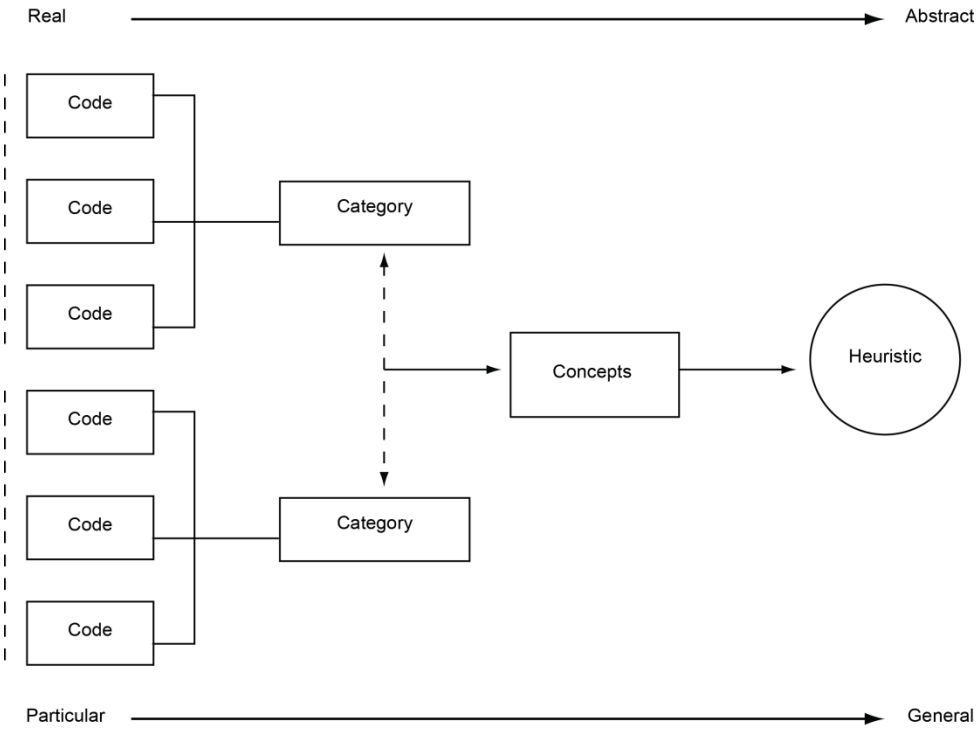
This framework grounds the hermeneutic and it ensures systematic reflection on all aspects of the research.

1. **The Hermeneutic Circle:** The hermeneutic circle is fundamental to the interpretation process. This principle suggests that understanding is achieved through iterations in a dialogical reflection. The researcher iterates between considering the interdependent meaning of parts and the whole that they form. This principle underlies the other interpretive principles.
2. **Contextualisation:** The research critically reflects on the social and historical background of the field of the designers, taking into account the historicity of events and foregoing interactions that shaped the environment of the researched phenomena.
3. **Suspicion and sensitivity:** The researcher must be sensitive to biases, and must practice suspicion of their systematic distortions. Suspicion begins with the adoption of epoch to clear the field of analysis from prejudice; the notion of suspicion carries the freedom from bias throughout the hermeneutic analysis.
4. **Interaction between researcher and participants:** The research methodology must support reciprocal dialogue between the researcher and participants, where the contributions of participants are allowed to affect the co-construction of ideas. This principle calls on the researcher to acknowledge and reflect on the social construction of the data derived from the interaction.
5. **Multiple interpretations:** Each participant in the research may offer different and novel interpretations of the issues studied. The multiple voices are supported in the research by specifying where individual differences among participants affected the findings. The voices are represented in the actual words of the participants.
6. **Abstraction and generalisation:** Hermeneutic interpretation cannot be generalised directly from the findings, but must be tempered by an abstraction process. General findings are abstracted from their individual detail and applied to the appropriate level of understanding. It is in this process of abstracted meaning making that new knowledge is generated.
7. **Dialogical reasoning:** The researcher is required to iterate among contradictions between initial theoretical preconceptions and the emergent findings of the data. The researcher must allow the data to tell the story and not to fit the findings within a predetermined theory.

Appendix b: Research process reasoning model

Phase	Method	Tools
Initial (Deductive)	Development of heuristics personal values and beliefs based on experience and prior research	Reflection
Initial (inductive)	Literature review and development of initial research questions rational, aims objectives and context.	Online search, library research, following references
Investigation (inductive)	Analysis of projects and designers from literature	Case evaluation project + published work
Deductive	Development of initial conceptual categories for taxonomy	Synthesis, model-building
Inductive	Design and evaluation of interview guide and material	Hermeneutic (semi-structured) interview
Inductive	Hermeneutic interview	
Inductive	Analysis of hermeneutic interview	Transcript analysis, Hermeneutic analysis
Summary	Initial summarisation of transcript and interview data	Synthesis, model-building
Inductive	Integration of interview data toward development of taxonomy	Transcript analysis, Hermeneutic content analysis
Deductive	Incorporation of theory	
Deductive	Development of conceptual categories and interpretive models	Synthesis, model-building
Deductive	Taxonomy	Synthesis, model-building, theory construction

Appendix c: Code to theory model of analysis



Code to Theory model for inductive analysis: (Saldaña, 2009, p. 12)

	Pre-coding	**First cycle coding**			**Second cycle coding**
Aim	Initial read through of transcripts	Identify specific segments of information		Reduce overlap	Identify Salient concepts
Methods		Descriptive/ Value coding		Descriptive/ Value coding	Focused coding
Outputs	Pages of transcript	Many segments of transcript	30-40 codes	10-20 categories	4 concepts

The coding process used in the inductive analysis adapted from Creswell (2002 p.266)

Codes	Categories	Sub-Categories	Concepts	Taxonomy
Sustainability; Obsolescence; Furniture design; Emergent behaviours; Production; Material; Systems of use	Designers Focus	Discipline	Engendered Contexts	Associative Design Practice
Mental health; Political economy; Film; Visual culture; Activism; Dissident behaviours;		Science		Critical Design Practice
Biotechnology; Synthetic biological futures; Robotics; Post humanism, Genetic engineering.		Society		Speculative Design Practice

Satire; Poetics; Juxtaposition;	Design methods in critical design practice	Satire	Satiric Design	Method
Fiction; Subversion of familiar design archetype; making strange;		Ambiguity		
embedding narrative; extrinsic narrative; laconic narrative;		Narrative		
design principles; sensitivity to the design context; highly resolved objects; Iterative processes;		Design Principles		

Appendix d: Codes-categories-concepts-taxonomy

The table shows the relationships between the coding categorisation that were interpreted to inform the elements of the taxonomy.

Codes	Categories	Sub-Categories	Concepts	Taxonomy
Pedagogy; Research; Self-initiated studio projects; Para-academic work.	Contexts of operation		Context and Facilitation	Context
Gallery dissemination; Exhibitions; Mass-media dissemination; Research publication.	Contexts of dissemination			
Funding processes; Funding bodies; Challenges to funding.	Sustaining critical design practice			
Story telling; Provocation; Debate; Public engagement; Democratisation of technology; Design as discourse; Conversation; Critical thinking; Commentary; Research through design; Entertainment	The function of critical design practice		Context and Facilitation	Context
Gallery dissemination; Exhibitions; Mass-media dissemination; Research publication;	Contexts of dissemination			
Research through design; Reflective practice; Practice led research	Critical design as design research			
Substantive theories of technology; Critical theory; Science and Technology Studies; Phenomenology; Reflective practice; Practice based research.	Concepts grounding practice			

Appendix d: Codes-categories-concepts-taxonomy

The table shows the relationships between the coding categorisation that were interpreted to inform the elements of the taxonomy.