

# **Design Fiction and Participation**

## **–from Social Dreaming to Speculative Heterotopia**



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I would like to dedicate this thesis to my wife, Claire Dean,  
thank you for our everyday.



## Declaration

I hereby declare that except where specific reference is made to the work of others, the contents of this dissertation are original and have not been submitted in whole or in part for consideration for any other degree or qualification in this, or any other university. This dissertation is my own work and contains nothing which is the outcome of work done in collaboration with others, except as specified in the text and Acknowledgements. This dissertation contains fewer than 80,000 words including appendices, references, footnotes, tables and images, and has fewer than 150 figures.

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## Abstract

Over the last decade design fiction, the speculative design method, has been cultivated within the design community. It has been increasingly adopted, or at least experimented with, in various areas of government, industry and academia, as new methods to engage with potential futures are sought out. Orienting design practice as an overtly fictive act, design fictions are a form of worldbuilding used variously in the service of rhetoric, innovation and research. The method has been the preserve of designers, researchers and artists working in industry and academia, with a particular nexus between design and HCI. The design fiction works that they create often focus on the normative. Though non-normative perspectives are generally elided in the development of the method, Participatory Design –an approach to design that involves stakeholders as co-creators in design processes– has, until recently, demonstrated minimal interest in adopting speculative practices. Working from an egalitarian impulse, the thesis explores design fiction as a participatory practice.

Taking Research through Design as a methodology, the study offers reflections in, and on, the facilitation and prototyping processes undertaken by the author and others as part of two design projects which worked with older people on government policy in the UK; *ProtoPolicy* and *What If?*. Two methods bricolage and an adapted annotated portfolio were used. The use of bricolage as a method allowed me to develop artefacts as part of an iterative conversation between practice and theory. This process explored and diagrammatically visualised the concept of heterotopia and other relevant theories as a potential theoretical framework supportive of a participatory approach to design fiction. The portfolio gathered together products of the external participatory design fiction projects in a thematic exploration of participation, design fiction and heterotopia.

The thesis offers two contributions to knowledge. The first is *speculative heterotopia*, a theoretical framework to underpin a participatory approach to the design fiction method. The second is a scaffold to guide design facilitators in supporting participants through the possibilities within a design fiction project. The thesis concludes by highlighting issues for

facilitators and participant groups created by adopting a participatory approach to design fiction making use of *speculative heterotopia*.

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# Chapter 1

## Introduction

### 1.1 The aims of the thesis

Design fiction is ‘a kind of design’ conducted through ‘the deliberate use of diegetic prototypes to suspend disbelief about change’ (Bosch, 2012). It is one of a number of speculative approaches to design which are used to consider the potentiality of various futures. It has grown substantially as a research method over the last ten years as researchers from different disciplines seek to engage with technological futures. Technology is at the root of design fiction but researchers interests are not necessarily solely technological as the social implications of technology are also sought or considered.

To give a general idea of the growth in interest in design fiction a Google Scholar search for the term resulted in the low hundreds in 2012 while ten years later over five thousand results are returned. This growth has included more interest in participatory approaches to the methods use with little attention paid to how participation and design fiction interact. They come from different standpoints within the field of design and have seemingly irreconcilable aspirations. Participation is concerned with practical outputs being produced from democratic engagement in design, while design fiction prioritises critical reflection and debate through the design process and outputs.

As I encountered early design fictions I experienced them as an outsider. I saw the whiteness of the worlds presented, I saw comparatively high levels of wealth presented as standard and I saw disability as either erased or ignored. They felt disproportionately wealthy, ableist and white. Whether they were or not is debatable, however it inspired me to think about the nature of voice and contestation within design fiction as it relates to participation. This felt

particularly relevant as I could see a potential for the design fiction method to develop in this vein as an exclusionary practice, despite its potential to provide useful perspectives to a broad range of academic and commercial design practices. Scholars such as Martins have expressed equivalent concerns. Within participatory projects core design fiction theory was called on without reflection on the impact of participation on the method or the method on participation.

My aim within this research study is to consider the interaction between design fiction and participation to support design researchers and facilitators in using the method for participatory purposes. In order to do this I wanted theory useful to participatory approaches to be explicit and understandable and to provide support for those undertaking the work.

Recognising the diversity of approaches within Codesign and Participatory Design practices I have used the term ‘participatory approach’ to hold them loosely together, allowing me to focus on the interaction between the design fiction method pursued through participatory aims.

## **1.2 Thesis structure**

The thesis is divided into seven chapters, excluding the introduction they are summarised below.

### **1.2.1 Literature Review**

The literature review establishes a rationale for the research study. It is divided into four sections that cover futures, Human Computer Interaction, design fiction and participation. Beginning with an outline of key theories of time that ground understandings of futures I move on to discuss how modernity frames our understanding of progress and how power over conceptualisations of the future is unequal and fiercely contested. Human Computer Interaction is introduced as an academic field that is deeply concerned with technological futures, ideas of progress and contestation, in which both participatory design and speculative design play a role in shaping futures through their approaches to research. The speculative design method, design fiction is then introduced and discussed in greater detail prior to a brief discussion of the related work which demonstrates how participatory approaches to design fictions development have progressed to date. At the end of the literature review I identify a gap in the literature and introduce research questions that seek to address this space.



### **1.2.2 Methodology**

The methodology demonstrates how I approached and conducted the research study. It is divided into four sections that cover the selection of a methodological approach, the expectations of Research through Design, as well as the specific research methods I selected to conduct the research study and the research study context. The section on methodological approach positions my inquiry within the ‘new paradigms’: Critical Theory, Participatory and Constructivism Lincoln et al. (2018) and addresses my theoretical perspective and motivations. I discuss potential research methodologies in order to form my own approach around the needs of my research questions (Crotty, 1998). Thereafter I briefly describe the history and expectations of Research through Design before addressing the research methods used and my approach to knowledge validation. Finally, the Research Study Context introduces the two external projects through which I have conducted the research. The *ProtoPolicy* and *What If?* projects worked with older people and were devised as explorations of the use of design fiction in policy debate.

### **1.2.3 Design as Enquiry**

The first findings chapter is split into three sections; A Portolan Chart, A Miscellany and Omissions. The first two sections form a multi-layered bricolage of two and three dimensional artefacts, ‘a pieced together set of representations [] fitted to the specifics of a complex situation’ (Denzin and Lincoln, 2011). They represent an ‘emergent construction’ (Gray and Malins, 2016) that points the viewer towards ways to grapple with the theory surrounding design fiction. Throughout the chapter I describe and discuss the bricolage, its material, theory, and its form, which borrows from archaic navigational aids. Then, finally I discuss some omissions of theory.

### **1.2.4 Annotations on facilitations and artefacts**

Following an introductory section indicating my approach to the annotation and the portfolio, the second findings chapter is split into two main sections; an adapted annotated portfolio and further discussion on it and the wider study. The portfolio is made up of a small number of design concepts, diegetic prototypes and design fictions produced through the *ProtoPolicy*

and *What If?* projects. The discussion of findings is discussed under the following headings; Fiction, Heterotopia and Participation.

### **1.2.5 Discussion**

Following an introduction positioning the discussion, I offer a definition of design fiction and consider how three aspects of design fiction theory; ideas of disbelief, dishonesty and disruption relate to a participatory approach to the method. Then, I briefly look at how design reasons and I consider what that means for both design fiction and a participatory design fiction practice. Finally, I present two contributions to knowledge, a theoretical framework and a scaffold for facilitators engaging in participatory approaches to design fiction.

### **1.2.6 Conclusion**

The conclusion presents an overview which summarises the context of the study and methodology, before moving onto address the research questions through the findings and contributions to knowledge. The contributions, a theoretical framework and a scaffold for design facilitators, are considered. The challenges and limitations of the study are explored prior to a discussion of subsequent and future work. Finally, the implications of the research are addressed.

# Chapter 2

## Literature Review

### 2.1 Introduction

This literature review seeks to establish a clear rationale for my research study that focuses on one intersection between participatory design and speculative design practices. To arrive at that rationale I will briefly outline theories of time and orientations towards futures to prepare the ground for a discussion of the ways in which participatory and speculative design practices make use of the future. I then introduce design fiction, a speculative design method, describing its genesis and development, before reviewing participatory approaches and identifying a lacuna for further academic investigation.

### 2.2 The Future

#### 2.2.1 From time to time horizons

Thing. Thing. Thing. Thing. This thing. It is *now*. Things happen. But things aren't always happening, so there must be *not now* too. What is this then, this *not now* that happens when *now* is not happening? Well, there are *not now* things that did happen and there are *not now* things that will happen. And more than that there are *not now* things that happen before other *not now* things that happen. And there are *not now* things that will happen after other *not now* things that will happen. Let's give a name to all the things that happen *now*, let's call them – the present. Let's call all the things that are *not now* that did happen – the past. And

let's call all the things that are *not now* that will happen – the future. So now we have; the present, the past and the future.

At some point in its development the human animal understood time, or rather chronology. Events probably proceeded in a considerably less convoluted manner than the way in which I have imagined them. However, this way of presenting a human understanding of temporal order aligns with McTaggart's view of the A-series time (1908). And it is his argument that 'remains the *locus classicus* for both the A-theory and B-theory of time' (Dyke, 2002, pp. 458-474). While Urry, explains B-series theory as 'the sense of time as "before and after"' (Urry, 2016, p. 78) and in it there are separate identifiable instants that are identical to one another in infinite succession. Luhmann offers a definition of A-series time as being relational, it is 'the interpretation of reality with regard to the difference between past and future' (Luhmann, 1976, p. 135) as perceived from within a chronology. Szerszynski clarifies matters observing that A-series time is 'invoked whenever we use linguistic tenses' (Szerszynski, 2016, p. 4) where the human is present within the series of events; the past to the present to the future.

Luhmann's work towards a sociological analysis argues that only a phenomenological approach provides a base for meaningfully combining the different conceptual understandings of time. He outlines three temporal modal forms, which I outline here primarily in relation to the future mode; chronological conception, the theory of modalities and a phenomenological analysis. In the chronological conception the future is mathematically conceived as 'the series of dates which will come after the present' (Luhmann, 1976, p. 138). While, in the theory of modalities language provides the framework of modes; the past, present, and future. And in a phenomenological analysis we look from the present out towards the time horizon of the future. Luhmann argues that only a phenomenological analysis can support meaningful combinations of the modal forms as 'all iteration of temporal forms has to have its base in a present' (Luhmann, 1976, p. 140). In adopting the phenomenological modal form the present integrates reality and time. Luhmann asserts that as a direct consequence of perceiving the future as a temporal horizon of the present, 'The future cannot begin' (Luhmann, 1976, p. 140). The time horizon of the future may be ever-unattainable from the present, yet it still shapes our understanding of a situation. It does so in two ways, via 'present futures' and 'future presents' two concepts of the future that are in interaction with each other. For Opitz and Tellmann 'future presents' act at an operative level and transform 'the potentiality of a given moment into a particular actualization, which will again give rise to the next one' while 'present futures' refer to 'the discourses, visualizations and enactments of possible futures – in short, it is about the 'politics of truth' linked to the future' (Opitz and Tellmann, 2015, p. 110). Luhmann uses the relationship between these conceptual dualities to define open futures, noting that, 'If we accept this distinction of the present future and future presents,

we can define an open future as present future which has room for several mutually exclusive future presents' (Luhmann, 1976, p. 140).

The concepts of futurization and defuturization consider how the future relates to the present and vice versa. While the idea of futurization may be understood as 'the move towards an open conception of the future as undetermined and potentially radically different from the present' (Szerszynski, 2016, p. 10). The notion of defuturization is characterised by a diminishing of possible futures; the innumerable become many, then several, and, eventually, only one remains. Luhmann argues that 'We can think of degrees of openness and call futurization increasing and defuturization decreasing the openness of a present future' (Luhmann, 1976, p. 141). And in so doing we can see how for defuturization 'the 'present future' (the future as it is imagined and experienced) is felt as less 'other', and 'future presents' are seen as more tightly bound to the 'present present'" (Szerszynski, 2016, p. 10).

We can understand Luhmann's 'mutually exclusive future presents' as akin to the scenarios and wildcards visualised in Hancock and Bezold's futures cone (see figure 2.2). And in turn, the entire possibility space represented in the diagram may be understood as being an *open future*.

### 2.2.2 Conceptualising the future

In the contemporary Western world 'the future' is commonly conceptualised with the recognition that it is impossible to make reliable, accurate predictions about the future and as a result the existence of a wide range of potential alternative futures is admitted (Pollastri et al., 2016, p. 33). However, this state of affairs has not always been the case, people have had a variety of relationships with the temporal domain throughout history. The myths of ancient and traditional cultures account for the unknowable nature of the future by ascribing it as being preordained, as fated. And as such the future may only be met by private negation (Luhmann, 1976, p. 141). While in modern times that concept has largely been 'replaced with the unquestioned assumption that the future is ours to make, shape and exploit' (Adam, 2010, p. 364). It would be easy to consider 'the future' here as being singular, however if we inspect it more closely we find the bloom of the future to be an inflorescence, a plurality. As Urry recognised, the whole field of futures is fraught with danger as 'futures are incredibly contested, saturated with conflicting social interests' (Urry, 2016, p. 7). There are many entities across the world that are actively engaged in the public discourses surrounding futures who develop *future presents* in many varied forms, from manifestos to management reports and beyond. Political movements and parties, industry lobbies and grass-roots pressure groups, big corporations

and local campaigners all attempt to influence the public's perception of what is possible, as well as what is desirable. These entities engage in futures debates because they understand that competing discourses are in tension in any attempt to alter the *status quo* and shape potential futures. They recognise,

How one event is linked to the next is determined by what comes before and by what one expects to follow. Discourses about the future (or the past, for that matter) exist as part of the operations which ensure the continuity of the system (Opitz and Tellmann, 2015, p. 110).

It is in the amalgamation of, and in this interplay between, discourses that Baudrillard argues that 'the dynamic of modernity reveals itself' (Baudrillard, 1987, p. 70). It does so in two ways; in 'the locus of emergence of factors of rupture and as a compromise solution with respect to factors of order and tradition' (Baudrillard, 1987, p. 70).

### **2.2.3 Modernity, progress and inequality**

Given that modernity shapes the present's relation with the future it requires further elaboration. According to Baudrillard modernity is not a sociological, political or even historical concept, rather, it is

a characteristic mode of civilization, which opposes itself to tradition, that is to say, to all other anterior or traditional cultures: confronting the geographic and symbolic diversity of the latter, modernity imposes itself throughout the world as a homogeneous unity, irradiating from the Occident. Nevertheless, it remains a confused notion, which connotes in a global manner any historical evolution and change of mentality (Baudrillard, 1987, p. 63).

From this definition we can understand that the tensions between tradition and modernity play out across both space and time. One example of modernity's globalising capacity is in the establishment of 'clock time', where the forces of Western globalisation are visible in the speed and spread of technological development (Adam, 2010; Urry, 2016). From the fourteenth century onward the connection between the orbits of the planets and time is eroded. Until, at the outset of the twentieth century it is finally broken and the sundial's *apparent solar time* is replaced by the clock's *mean solar time* (Holford-Strevens, 2007, p. 10). At this point, the zero meridian in Greenwich, England, is established, and subsequently in 1913, the transmission of a global time signal is initiated emanating from the Eiffel Tower, France.

And with these changes ‘Standard time is instituted across the world’ (Adam, 2010, p. 365). And, as an entity that is globally standardised and decontextualised, time now becomes fully available as an entity with value to be traded on the futures markets, in similar fashion to international sea trade where trading *in absentia* was already common (Adam, 2010, p. 365). Baudrillard contends that it is the ‘effects of science and technology’ that are ‘modern’, not science and technology themselves. He states,

Modernity is not technologic and scientific revolution, it is the play and the implication of the latter in the spectacle of private and social life, in the everyday dimension of the media, of gadgets, of domestic well-being or the conquest of space (Baudrillard, 1987, p. 71).

Through this extension of the previously given definition we can see that the tensions between tradition and modernity are played out in the quotidian. They arise, however, from something akin to a Western imperialism enforced through a societal adherence to progress, often but not always framed as technological advancement.

Progress, is generally understood as a good - it implies the notion that ‘humankind has ‘advanced’, is advancing and should continue to advance’ (Urry, 2016, p. 102) with little, or no, limitation. In discourse its adherents shield it from any counter arguments that may hold it back with accusations of Luddism. However, Urry draws on Martin Luther King’s ‘Human progress is neither automatic nor inevitable’ speech to demonstrate that progress has other conceptions that recognise that ‘progress and indeed futures more generally do not develop automatically but involve suffering, struggle and conflict’ (Urry, 2016, p. 103). As William Gibson is purported to have said, ‘The future is already here - it’s just not very evenly distributed’ (O’Toole, 2012). It is the inherent inequality underpinning this realisation that Urry recognises when he argues that ‘A key element of power is thus power over the future, of the many ways it is imagined, organised, materialised and distributed’ (Urry, 2016, p. 21).

### **2.2.4 Futures and anticipatory action**

At a personal level, humans have a natural ability to navigate the complexities of the future as ‘Without giving much thought to the matter, we alternate perspectives between anticipated *future presents* and enacted *present futures*’ (Adam, 2010). However, when it comes to sensemaking, ‘no two people construct their inner worlds in exactly the same way. Or, to put it differently, different worldviews and values disclose different truths’ (Slaughter, 2012). As

a result futures are highly contested and the process of navigating them becomes ever more complex as their scale increases. In the face of such complexity, Slaughter describes what the academic endeavour of futures attempts to provide, noting that,

The ‘map of the future’ is a metaphor that describes what the futures field as a whole tries to do. Essentially, it tries to provide policy-makers and others with views, images, alternatives etc. about futures in order to inform the present (Slaughter, 1996).

It attempts to do this through three distinct approaches to the futures studies field; pop-futurism, Problem-oriented futures work, Critical and epistemological futures studies. *Pop-futurism* is light on theory and insight, it is the marketing-friendly ‘world of the fleeting image and the transient sound-bite’ (Slaughter, 2002). The majority of futures work is *problem-orientated*, focused on social rules and regulations, and ‘looks at the ways that societies and organisations are responding, or should respond, to the challenges of the near-term future’ (Slaughter, 2002). While *critical futures studies* try

to ‘probe beneath the surface’ of social life and to discern some of the deeper processes of meaning-making, paradigm formation and the active influence of obscured worldview commitments... ..to ‘interrogate’, question and critique the symbolic foundations of social life and — this is the real point — hence to discern the grounds of new, or renewed, options (Slaughter, 2002).

And *epistemological futures studies* consider the ‘foundational areas that feed into the futures enterprise’ (Slaughter, 2002).

Once people in the present are informed of potential futures they may turn towards action. Anderson reasons that foremost among the various kinds of anticipatory action that ready humans to meet the future are preemption, precaution and preparedness (2010). Of these, Cooper contends that, only preemption actively seeks to draw the future into being. They argue that

Pre-emption transforms our generalized alertness into a real mobilizing force, compelling us to become the uncertain future we’re most in thrall to. As a mode of anticipation, it is future-invocative rather than predictive or representative, since the future it calls forth is effectively generated *de novo* out of our collective apprehensiveness (Cooper, 2006).



Where Cooper discusses these ideas in relation to military action and climate change there is a wider move to legitimise the logic of anticipatory action in many varied, and less apocalyptic, contexts (Anderson, 2010).

### 2.2.5 From futures to design futures and critical perspectives

Luhmann differentiates the attributes of Utopias and technologies as they influence futures. He argues that *present futures* commonly have Utopian formulations with optimistic and pessimistic tones and that such formulations mark the presence of critical voices. They do not, however, create attainable futures. Such futures mutate with changes to structural conditions, and in recent times alter at speed (Luhmann, 1976, p. 142). In contrast, of technologies, he notes that they, ‘orient themselves to future presents. They transform them into a string of anticipated presents’ (Luhmann, 1976). This transformation is guided by design, as well as other fields. As Auger and Hanna note, ‘Industrial design, for the most part, is about exploiting the potential of new technologies to create functional, usable and desirable products - design is at the heart of future formation’ (Auger and Hanna, 2019). As a result, design has drawn on the ‘theoretical base of future studies’ (Evans, 2014, p. 190) as it seeks to develop its own future-focused methods. Evans identifies design’s approaches to futures in the development of ‘next-next generation products and services’ as variously making use of trends and trend forecasting, technology roadmapping, scenarios, horizon scanning, expert group analysis and mood boards & evidence walls (Evans, 2014, p. 194-195). He proposes a structuring mechanism to give designers a route map for their design futures work. He names this mechanism the Design Futures Research Framework and through it he identifies five critical research factors, as follows,

- 1) understanding the socio-cultural context, 2) tracking of trends and movements in behaviour, 3) utilisation of non-design research techniques, 4) designers use of intuition and insight, and 5) gathering expert opinion (Evans, 2014).

Industrial design, is what Dunne and Raby would call an affirmative mode of design that operates broadly in support of the status quo of society. They contrast the affirmative mode with the critical (2013). Sangiorgi and Scott identify a number of critical practices in design, that may be understood as forms of conceptual design, including; critical design (Dunne and Raby, 2001; Mazé and Redström, 2009) reflective design and critical technical practice (Sengers et al., 2005), interrogative design (Tharp and Tharp, 2009, p. 87), critical artefact methodology (Bowen, 2009), speculative design (Dunne and Raby, 2013) and design fiction (Bleecker, 2009).

The unifying characteristic of these approaches is their methodological use of designed objects and systems to elicit critical reflection among users, observers and the designers themselves. (Sangiorgi and Scott, 2014, p. 116)

In their paper ‘How The Future Happens’, speculative designers Auger and Hanna identify a series of problematic constraints that limit and shape the pathways to potential futures. First among them, they identify as ‘progress dogma’, an unquestioning faith in technology. They argue that among those with the ability to shape the future an adherence to ‘progress dogma’ leads to an inability to entertain the negative implications of technology. A situation which means that ‘Progress dogma keeps us on the current technological trajectory, for better or for worse’ (Auger and Hanna, 2019). It is as fixed and problematic as Luddism. To counter ‘progress dogma’ they remind designers of the need to re-frame their thinking with regard to technology. Among other things they suggest designers remember that, the future created through technology is not automatically better than the present, technology is not necessarily a panacea for society’s ailments, and new technology may have unforeseen implications that should be explored in advance of their deployment.

However, the critical theorist Andrew Feenberg argues, as he discusses the future of industrial civilisation, that progress is not the significant issue. Instead he claims that ‘the real issue is not technology or progress per se but the variety of possible technologies and paths of progress among which we must choose’ (Feenberg, 2002). For him it is the breadth of intersecting possibilities that make open futures problematic.

In any move to understand and shape the future these issues; seemingly exponential possibility, Luddism versus progress, and contested preferability come to the fore. In recent years both technology and progress have become inextricably tied to the idea of digital disruption, which is in part the domain of the academic field of Human-Computer Interaction.

## **2.3 Human Computer Interaction**

Human-computer interaction, or HCI, is rooted in several established disciplines. It is a relatively new field of research and practice. It is the central concern of computer science and systems design, while for many other disciplines it is a significant specialism (Dix, 2003, pp. 3-4). In 2007, Harrison et al. discuss key metaphors that guide the paradigms of HCI. In the first wave ‘interaction [is understood as] as a form of man-machine coupling’ and a disciplinary link is made with human factors and engineering. In the second wave interaction is understood as being the ‘mind and computer as coupled information processors’

and a disciplinary connection with cognitive science is recognised. Harrison et al. identify a third wave arising ‘from phenomena the other two waves find difficult to handle’ where interaction is understood as being ‘phenomenologically situated’. Emphasising that in this third paradigm ‘multiple meanings [are] made in context’ they name it ‘situated perspectives’ and no specific disciplinary connection is identified (Harrison et al., 2007). However, whether HCI is itself a discipline, or whether it should even aspire to be one, is a much debated issue with some speaking more to its multidisciplinary, its interdisciplinary or even its post disciplinary formation (Blackwell, 2015; Bødker, 2015; Reeves, 2015).

That said, Bannon argues for ‘a reformulation of the HCI discipline for the 21st century’. In doing so, he calls for a reimagining of HCI, ‘encouraging an openness to new forms of thinking about the human-technology relationship’ in the face of new technological developments (Bannon, 2011). He looks to critical design (Dunne and Raby, 2001) and to design fiction (Bleecker, 2009), to the new ways of working developing through maker culture, as well as to new (and still operational) organisations (EUSSET, 2020; The Internet of Things Council, 2020) wrangling with the potentialities and consequences of the Internet of Things as fruitful sites for that reimagining.

More recently, a fourth wave of HCI building on Harrison et al., described as ‘Entanglement HCI’ has been tentatively suggested (Frauenberger, 2019), and developed further (Homewood et al., 2020). Frauenberger argues that this paradigmatic shift suggests that our design practices must evolve further,

Collapsing ontology, epistemology and ethics into one, makes clear that any making of futures is all of this at once: designing technology means creating hybrid things with ambiguous boundaries and proposed programs of actions that seek to reconfigure agency and power with moral responsibility. I suggest to leave user-centred design behind and develop agonistic, participatory speculation methods to design meaningful relations, rather than optimising user experiences (Frauenberger, 2019).

It should be noted that the paradigms of HCI, as articulated by Harrison et al., are not necessarily inconsistent with each other (2007). HCI is inclusive and flexible adapting to shifts in context with each paradigmatic wave.

One view of HCI sees it as encompassing many views and practices. In this view it may be critiqued as being ‘everywhere and yet nowhere’ (Bannon, 2011). We might also view the design practices that make up that variety, such as the values orientated work of Participatory Design (Harrison et al., 2007), or the critical orientations of Speculative Design (Wong and

Khovanskaya, 2018), both associated with the third wave, as radically different research programmes in their own right. In this view they are separate to HCI, with their own re-specifications of human computer interaction (Bannon, 2011).

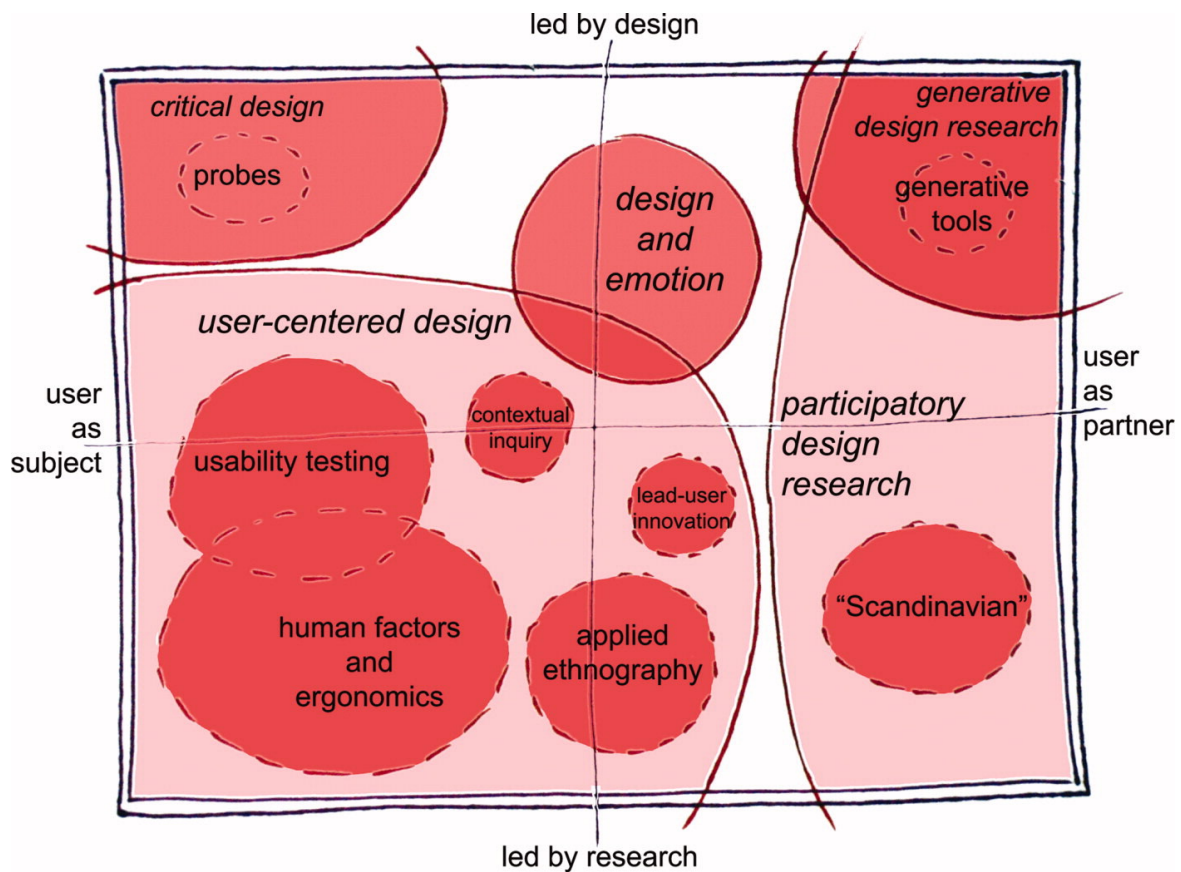


Figure 2.1 The current [as of 2008] landscape of human-centered design research as practiced in the design and development of products and services (Sanders and Stappers, 2008).

HCI practices fall within a Human Centred Design (HCD) approach to research and innovation, and are broadly set in opposition to the ‘technology push’ approach seen in ICT industry (Steen, 2008, p. 19). The research practices that Sanders and Stappers lay out (see figure 2.1) highlight the user as being somewhere on a continuum between subject and partner and the programme of work as being led by either a design or research agenda (Sanders and Stappers, 2008). These dynamic tensions are central to any research, or innovation, practices re-specification of HCI. Additionally, one might note that, while admitting the implicitly problematic ‘anthropocentricity’ (Thomas et al., 2017) of the HCD viewpoint, especially in a time of climate breakdown, Human Centred Design practices still have much to offer. As Buchanan notes, human-rights and human dignity are among the first principles of design, and,

We should consider what we mean by human dignity and how all of the products that we make either succeed or fail to support and advance human dignity. And we should think carefully about the nature of human rights-the spectrum of civil and political, economic and social, and cultural rights-and how these rights are directly affected by our work. The issues surrounding human dignity and human rights provide a new perspective for exploring the many moral and ethical problems that lie at the core of the design professions (Buchanan, 2001, xix).

### 2.3.1 Participatory Design

In order to accentuate my argument, this section and the following section on Speculative Design, see 2.3.2, are set against each other, with the excesses of each highlighted. In reality though there exists significantly more nuance across both fields.

Simonsen and Robertson offer a succinct definition of Participatory Design, as follows;

Participatory Design is about the direct involvement of people in the co-design of the information technologies they use. Its central concern is how collaborative design processes can be driven by the participation of the people who will be affected by the technology that is being designed (Simonsen and Robertson, 2013, xix).

Participatory Design emerged in Scandinavia in the 1970s (Bjerknes et al., 1987; Bødker, 1996) where researchers were ‘motivated by a Marxist commitment to democratically empowering workers and fostering democracy in the workplace’ (Spinuzzi, 2005) in the face of technological disruption to traditional models of work. The approach grew out of the concerns and practices of a diverse collection of researchers within Computer Systems development in Scandinavia, Europe and North America. Rather than operating within a single shared methodological approach or ideology early Participatory Design researchers sought ways to develop an ‘authentically cooperative process of technology design’ (Suchman, 1993, vii) that was contextually relevant to them.

Two ideals came to the fore in early Participatory Design projects. Participatory Designers recognised that new developments in computer systems in the workplace would be of a better quality if they were better informed. They argued that there would be better outcomes for both management and employees if there was direct worker involvement in an iterative design process (Schuler and Namioka, 1993). While management needs were fully acknowledged in the design process, there was also a clear political bias toward the worker. Within the design

process ‘the role of [the] participatory designer was to side with those who were termed ‘resource-weak participants’ this purposeful alignment with the worker was under-girded by the democratic belief that ‘those affected by a design should shape the outcome of it’ (Björgvinsson and Keshavarz, 2020).

Over time the contexts for Participatory Design processes reached beyond the workplace.

This reorientation stems from the condition that new media has entered every nook of our lives, that design and innovation activities have become distributed across contexts and competences often blurring the borders between citizens, private companies, the public domain and academia (Björgvinsson et al., 2010).

The broad range of Participatory Design practices encompass codesign, which is defined as ‘collective creativity as it is applied across the whole span of a design process’ (Sanders and Stappers, 2008). It is

concerned with envisioning alternative or future situations (‘what ought to be’, rather than ‘what is’) and... ..about generating specific, contextual responses to specific, contextual problems (Steen, 2009).

In codesign practice the research design process may be approached from two distinct mindsets towards participation. One offers a user-as-partner “designing with” outlook and the other takes a user-as-subject “designing for” approach, and each emanates from a different design tradition, from the European and US respectively (Sanders and Stappers, 2014*b*).

### **Envisioning practices**

Within HCI envisioning plays a significant role among both corporations and academic institutions. Reeves explains that it is used to:

establish and delineate a new area of research; to justify a interest in a particular kind of technology; to inspire; to provide an accountable ‘plan’ for the future for funders; or to attract funding to carry out particular kinds of work (Reeves, 2012).

Envisioning practices include future scenarios as described in papers and books, promotional research videos, vision statements, proposals, justifications, and technological artefacts

(Reeves, 2012). In Participatory Design scenarios are a key element of envisioning practices (Brandt et al., 2013). However, as Reeves goes on to highlight there is a lack of criticality in regard to the underpinning of envisioning. He notes that,

aspects of envisioning are not entirely foregrounded within technology research communities. Rather, they often come to implicitly frame discourse within the field, and configure a set of assumptions that orient ways in which our work is done (Reeves, 2012).

Simonsen and Robertson's definition of Participatory Design, at the start of this section, alongside the Reeves' explication of envisioning, may go some way to explaining the apparent lack of interest from within Participatory Design in the exploration of Speculative Design approaches. Participatory Design's desire for people to have practical democratic engagement in design practices which have immediate utility demonstrated in tangible design outputs is seemingly at odds with Speculative Design's fictively founded offer of critical reflection and debate.

Of course, Participatory Design is not without criticality or engagement with futures. However, it does operate within constraints born of its particular commitments. For example, both Futures Workshops (Jungk and Müllert, 1987) and Scenario Workshops (Street, 1997) are commonly used within Participatory Design. Futures Workshops are used to formulate practical solutions and action proposals when working with participant groups, who hold relevant lived experience, through critical, visionary and implementation focused stages (Jungk and Müllert, 1987). Similarly, Scenario Workshops have visionary and implementation focused stages, but build on participants' responses to a number of pre-written scenarios (Street, 1997). Both of these methods provide a means for participatory explorations of futures, as well as developing prospectively-orientated strategies to move toward those deemed desirable. As such, these methods focus on the potentially attainable, or rather, probable futures, even where they explore fantastic futures as part of their process.

Moves to explore the relation between fiction as a resource for Participatory Design are limited, Knutz et al. observes that 'the notion of fiction is strikingly absent from the vocabulary, discourse and theorization of participatory design' (Knutz et al., 2016). They are not entirely absent, for example, Dindler argues that 'the production of fictional space may be understood in terms of participants practicing games of make-believe mediated by props' (2010).

In considering Participatory Design and Critical Design Bannon and Ehn limit the potential relationship to a monologue delivered by the critical designers that participatory designers might, if they feel it relevant, choose to listen to, saying;

The relevance of this work to people in Participatory Design is that it provides ideas and inspiration for challenging some of the taken-for-granted positions we adopt in relation to society (Bannon and Ehn, 2013).

In their view of the relationship, critical designers are the providers of insights for participatory designers, and the relationship extends no further.

Brandt et al. outline this process in action. In considering the benefits of external influences on Participatory Design, they highlight the value of ‘the transgression of boundaries’ (Brandt et al., 2013) and the promotion of ambiguity within the cultural probes method (Gaver et al., 1999) as being of particular importance to Participatory Design. They go on to highlight the same, more ‘obvious’, transgressive benefits within critical and speculative design. Exemplifying how Dunne and Raby’s ‘critical exploration of the mundane’ was taken on by Mazé and Redström to create ‘conceptual prototypes’ for everyday settings which users lived with in order to generate insights (Mazé and Redström, 2009).

However, there is no question as to whether Participatory Design might adopt critical practices to develop such insights for themselves, with participants leading the speculation, or whether Participatory Design might have something to offer critical design, as there is minimal dialogue. More recently, thinking appears to have changed as Participatory Design begins to reevaluate its place in the world with calls for reimagining actively seeking new ways of integrating methods into participatory practice (Bannon et al., 2018).

### **2.3.2 Speculative Design**

A brief introduction to Speculative Design. Speculative critical practices have antecedents in the World’s Fairs, which since the 19<sup>th</sup> century have been used to showcase nations’ ‘technological dreams and aspirations’ and to present the ‘(positive) transformative potential’ (Smyth et al., 2021) of disruptive technologies. Dunne and Raby highlight the 1939 New York World’s Fair and the work of Norman Bel Geddes who ‘mixed modern, everyday technologies with dreams, fantasy, and the irrational’ as a significant inspiration (Dunne and Raby, 2013, p. 164).

Another precursor is Radical Design (or beyond architectural contexts, Anti-design) developed in Italy it ‘established a tradition of artistic and political discourse in design’ (Malpass,



2017, p. 21). Studios such as Archizoom and Superstudio (Florence) and Archigram (London) ‘adopted an explicitly speculative approach to both the critique of architecture and the envisionment of future cities’ (Smyth et al., 2021) in an effort to break from the past and challenge the modernist ideal of consumption. Set outside industrial application and with close ties to academia, Radical Design projects were not built but shared in magazines (Malpass, 2017, p. 24) and Anti-design found its home in art galleries (Sparke, 2001, p. 278).

As mentioned previously (see section 2.2.5) Speculative Design’s critical practices may be understood as forms of conceptual design, design about ideas. Dunne and Raby offer a more extensive view of speculative critical practices than Sangiorgi and Scott, including into the mix; Speculative Design (Auger, 2012), Critical Design (Dunne, 2005; Dunne and Raby, 2001), Design Fiction (Bleecker, 2009), Design Futures (Candy, 2012; Mazé, 2014), Antidesign (Sparke, 2001, p. 277), Radical Design<sup>1</sup> (Menking, 2019), Interrogative Design (MIT, 2010), Design for debate (Dunne, 2008), Adversarial Design (DiSalvo, 2012), Discursive Design (Tharp and Tharp, 2009), and Futurescaping (Jain et al., 2011).

To highlight key similarities in contemporary speculative practices Auger addresses the complexities of definition drawing on a number of definitions; Critical Design quoting Dunne and Raby (2007), Discursive Design from Tharp and Tharp (2009), Design Probes from the Philips company website (no longer directly available, but quoted in Auger (2013)), and Design Fictions quoting Bruce Sterling (Bosch, 2012). He notes that,

There is much overlap between these practices, the differences are subtle and based primarily on geographical or contextual usage: all remove the constraints from the commercial sector that define normative design processes; use models and prototypes at the heart of the enquiry; and use fiction to present alternative products, systems or worlds (Auger, 2013).

Later Tharp and Tharp clarify their definition of ‘discursive design’ as an umbrella term which encapsulates many critical practices in design (Tharp and Tharp, 2019). However, Auger’s assessment stands. In describing the various modifiers to design, common across these terms, Auger notes that they ‘act to dislocate the object from everyday life, exposing their fictional or academic status’ (Auger, 2013) and it is in this way that the modifiers serve to frame the expected engagement. As I move forward I will take Auger’s lead and use the terms design fiction and Speculative Design almost interchangeably recognising as I do so that these speculative practices are often in conversation with themselves.

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<sup>1</sup>Casabella, no 367, 1972.

In a write up of a lecture, artist and designer, Tobias Revell considers Sanders and Stappers positioning of critical design in their paper on codesign (see figure 2.1) (Sanders and Stappers, 2008), asking,

where do other fields place it? I came across this diagram while teaching a summer school this year and found it both strangely comforting and offensive at the same time. There's critical design hugging the top-left corner, jealously and arrogantly guarding its expertise. I was asked why critical design doesn't branch out and work with others and I could only think that it would be hypocritical to work with the things you were critiquing (Revell, 2014).

While I recognise that this may be a somewhat off-the-cuff remark and as such I must be careful in how much importance to attach to it. Revell offers a caricature of critical design that seems to recognise how some might view the area while accepting the isolated position that Sanders and Stappers suggest critical design occupies. Beyond this however, I can't help but note that Revell seems to adhere to a worldview in which the critical designer must set themselves apart from the world in order to critique it. Bowen has argued that attitudes of elitism embedded in Critical Theory, informed by avant-garde articulations of high and low cultures, are echoed in Critical Design. He notes that, 'critical design also implies that users (consumers?) have low aspirations for products and that they are unaware of the higher ideals they should want' (Bowen, 2010). Must speculative designers become observers placing themselves outside the world, or above society, in order to achieve the objectivity necessary to comment? Perhaps not, Bowen's work on critical artefact methodology suggests otherwise as it makes use of Critical Design as a part of a wider participatory process. Equally, describing distinctly collaborative, rather than participatory, ambitions Dunne and Raby lay out a more inclusive call to arms for Speculative Design, saying,

We believe that by speculating more, at all levels of society, and exploring alternative scenarios, reality will become more malleable and, although the future cannot be predicted, we can help set in place today factors that will increase the probability of more desirable futures happening (Dunne and Raby, 2013).

### **Probable, Plausible, Possible & Preferable**

In the opening chapter of 'Speculative Everything' Dunne and Raby note that Candy introduced them to the concept of the futures cone in a 2009 lecture (based on his upcoming

thesis, (Candy, 2010)) at the Royal College of Art through an illustration which they found intriguing (2013). At this time, the futures cone concept was already well established among various disciplines, most particularly in the foresight field. For example, Henchey established the futures concept in relation to the environment (Henchey, 1978), while Hancock and Bezold were concerned with matters of health (Hancock and Bezold, 1994), and a variant of the concept was in use by the US military (Taylor, 1990). Candy's version of the futures cone drew directly on an overview, 'A Primer to Future Studies, Foresight and the Use of Scenarios' (Voros, 2001), which described three classes and one sub-class of future (based on Henchey's taxonomy (1978)); the possible, the plausible, the probable and the preferable, while the futurist's own illustration adapted Hancock and Bezold's diagram (1994), (see figure 2.2).

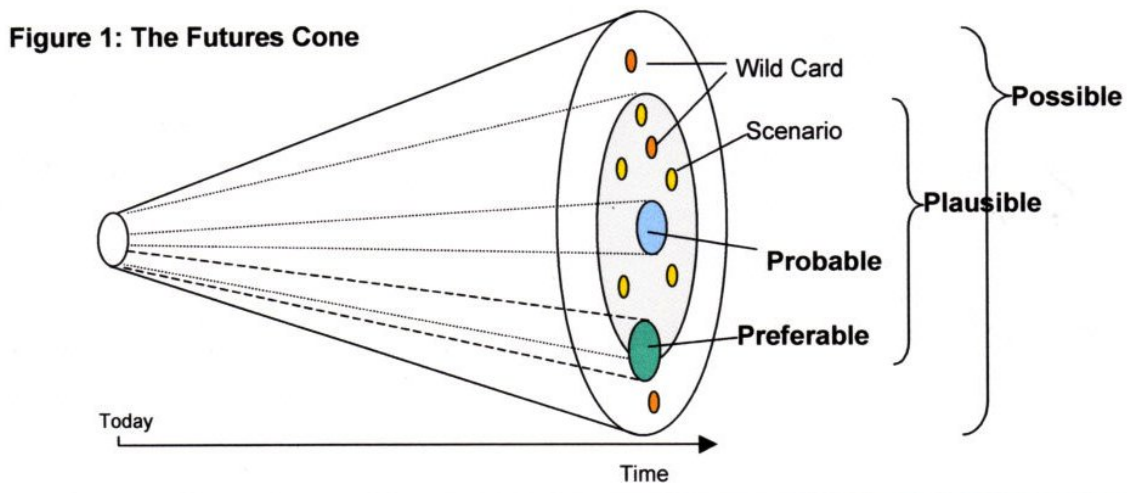


Figure 2.2 This image was adapted by Joseph Voros from the work of Hancock, T. and Bezold, C. (1994). Possible futures, preferable futures, *Healthcare Forum Journal*, Vol. 37, No. 2, 23-29.

Voros describes *possible futures* as the class of futures in which all imaginable things may occur, including those things beyond 'currently-accepted physical laws or principles' (Voros, 2001, p.2), which may be based on knowledge that we do not yet have – which we might call 'future knowledge'. While *plausible futures* are based on 'current knowledge' and as a result represent a smaller sub-set of futures. The most likely futures are *probable futures*, an even smaller sub-set of futures based on linear extensions or even discontinuities of trends. These classes of futures are concerned with informational or cognitive knowledge, whereas the fourth class of futures, *preferable futures*, are derived from subjective value judgements and may occur in any of the other three classes.

To establish their position and interest, Dunne and Raby point to the ways in which design practice relates to the futures cone illustration (Dunne and Raby, 2013, pp.2-4). They argue that most designers work toward *probable futures* using design methods orientated toward such a space. They go further claiming that the evaluation of designs is ‘closely linked to a thorough understanding of probable futures’ (Dunne and Raby, 2013, p.3), while acknowledging that it is not generally discussed in those terms. They note that *plausible futures* are the domain of foresight and scenario planning and are not about prediction but the exploration of alternatives in service to organisational preparedness, before moving quickly on to *possible futures*. Here Dunne and Raby diverge subtly from Voros’ definitions by highlighting the believability of the connection between a suggested world and the present in order to aid an audience’s critical reflection. Their focus on believability leads to two key points; firstly, they suggest that a string of events that lead from today’s world to the suggested world must be not only imaginable, but believable, and, secondly, the suggested world must be currently scientifically possible. In this way their understanding and practice is orientated toward the practices of mundane science fiction. Finally, in tackling *preferable futures*, overlapping at the intersection of *plausible futures* and *possible futures* Dunne and Raby recognise the problematic nature of preference, both in the subjective nature of values and decision making. Also in service to the idea of believability Dunne and Raby discount the idea of fantasy describing it as a realm of impossibility beyond the outer cone of possibility.

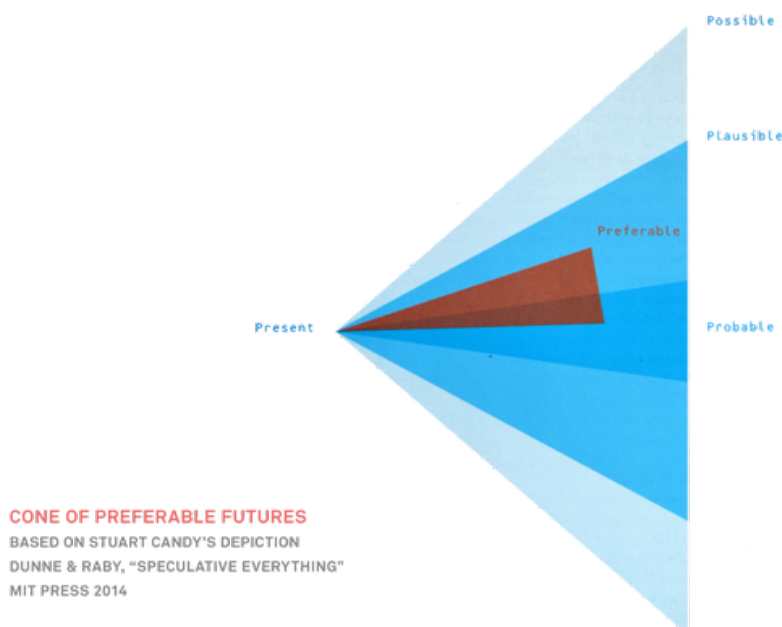


Figure 2.3 Dunne and Raby’s version of Stuart Candy’s version of The Futures Cone (Dunne and Raby, 2013, p.5)

Nearly two decades later, Voros reflected on his use of the futures cone within foresight work and discussed some additional concepts. Following the original alliterative conceit of the futures cone he considers the use of potential, preposterous, projected, and predicted futures (Voros, 2017). *Potential* futures, encapsulate the other classes of future, and may be understood as undetermined and ‘open’, and include all that may come after this moment. At the edges then of the *possible* future are *preposterous* futures. This class of future comes about in part due to homage and in part to pragmatism. The pragmatic part is a response to people’s difficulty in accepting this type of future within the *possible* class, while the homage relates to both Dator’s second law – ‘Any useful idea about the futures should appear to be ridiculous’ (Dator, 2019, p.2)– and Clarke’s conviction that ‘the only way of finding the limits of the possible is to venture a little way past them into the impossible’ (Clarke, 2013, pp.20-21). The credibility of futures is based on the degree of belief one can place in them.

In the more likely to occur section of the spectrum, we can imagine the *projected* future as being the most probable of probable futures; it is a singular business-as-usual extrapolation. Voros also notes one further future, the *predicted* future as claimed by someone who says it ‘will’ happen. This he discounts as being problematic in use as it obscures the intention of the futures cone to encourage openness in people as they think about the future.

Taylor’s version of the cone, ‘The Generic Cone of Plausibility’ (see figure 2.4), focuses on *plausible* futures and treats the futures cone as a visualisation of a theoretical process that produces a range of forecasts. Taylor has a specific interest in developing scenarios in a military context, to that end he includes a fixed and relatively short timeline of thirty years, a PEST (Political, Economic, Sociological and Technological) analysis and examples of specific wildcards, major events that could alter the future, such as those that are disruptive, aberrant, catastrophic and anomalous. Interestingly, in ‘The Cone of Plausibility: Past and Future’ (see figure 2.5) Taylor mirrors the future cone across the plane of the present moment to include the past in futures thinking. This enables users to track back from future events to past actions and consider consequences and their various interactions as they play out across the different trends and themes. Taylor’s process is part of a leadership programme and it is aimed at equipping executive level military personnel with skills in foresight work relevant to corporate management.

Dunne and Raby’s illustration ‘The Cone of Preferable Futures’ (see figure 2.3) featured in ‘Speculative Everything’ (2013) is critiqued by Coulton and Lindley with particular focus on the issues attendant to preferability and intentionality (Coulton and Lindley, 2017).

They argue that corporate vapourworlds, a neologism intended to proffer the concept of situated vapourware, tend to present a unified future that erases the past. This singular

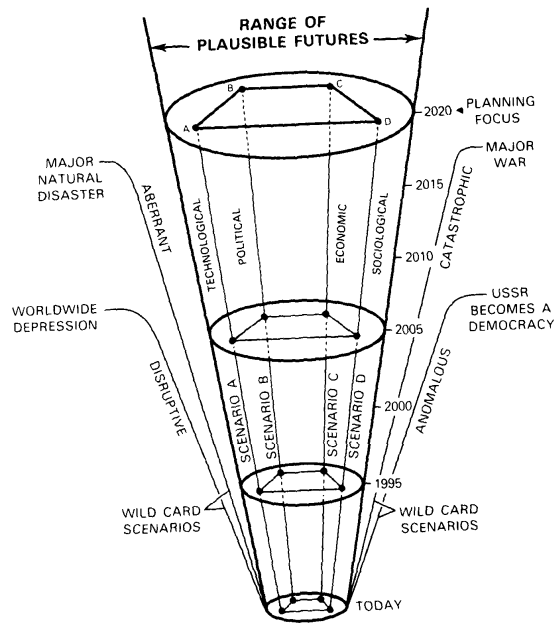


Figure 2.4 The Generic Cone of Plausibility (Taylor, 1990)

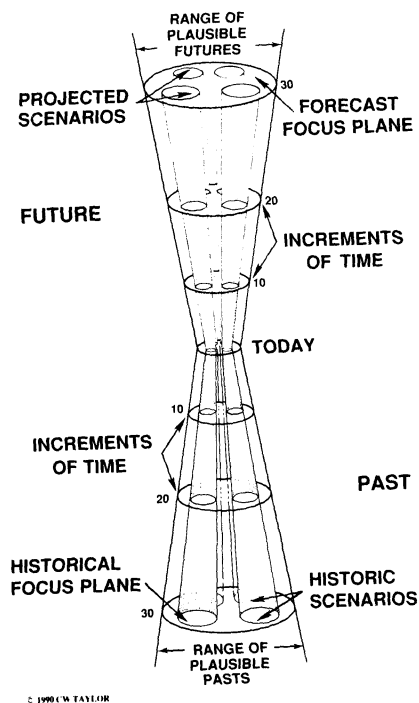


Figure 2.5 The Cone of Plausibility: Past and Future (Taylor, 1990, p.14)

predicted future, which they call a ‘future elect’ (Coulton and Lindley, 2017, p.S4637), works in service to a particular corporate intention, and the past’s erasure makes the claim that the featured product is successful to the point of ubiquity in the marketplace. Whereas, Coulton and Lindley contend that design fiction, whose practice is often outside commercial constraints, can operate in an ‘accretive space’ (Foster, 2013) where a ‘plurality of the future’ (Coulton and Lindley, 2017, p.S4638) are rendered more believable by the inclusion and contextualisation of the past.

Coulton and Lindley’s reading of *preferability* as represented in Dunne and Raby illustration (see figure 2.3) focuses on the weaknesses of the diagram rather than the strengths of their written argument (Dunne and Raby, 2013, p.6) detailing the problems surrounding *preferability*. Previously in support of the first iteration of their diagram, Coulton et al. argued that the concept of *preferability* ‘effectively encourages critical designers to adopt a privileged position’ (Coulton et al., 2016, p.1613) and risks ‘promoting elitist views of a ‘better world’ that society should aspire towards’ (Bowen, 2010, p.4) in a similar manner to that of Critical Theory.

To highlight the plurality of futures that design fiction affords Coulton and Lindley present ‘A Hermeneutic Model of the Future’ (see figure 2.6) as an illustration specifically fitting for Speculative Design, and which also moves to support inclusive approaches. The model was first titled ‘Plurality of perception of past, present, and future’ (Coulton et al., 2016, p.1621). It places a number of viewers in the present, each with their own view of the present, the past and the future. To the viewers left the past fans out from a centre point which is bisected by the plane of the present. To the viewers’ right the future opens out like Voros’s original cone with the omission of the preferable dimension. Each of the viewers holds their own understanding of the past, present and future, as shown by the bow shape of the model repeated in each of the represented viewers’ heads, as they look out over all potential temporalities.

These diagrams are useful because they segment the unimaginable, most consistently by considering infinite potentiality as it bisects infinite time. They offer a model to simplify matters, breaking down potentiality to clarify a language for possibility. However, problems arise in the ways in which they account for the viewer’s position. They place the viewer, intentionally or not, into the position of an invisible god, set in the heavens and removed from the world. In this way they position the viewer as overlooking time and possibility, setting them in a place that appears to be outside of time and unaffected by possibility. Only Coulton and Lindley visualise a viewer directly within their diagram. Here the viewer is

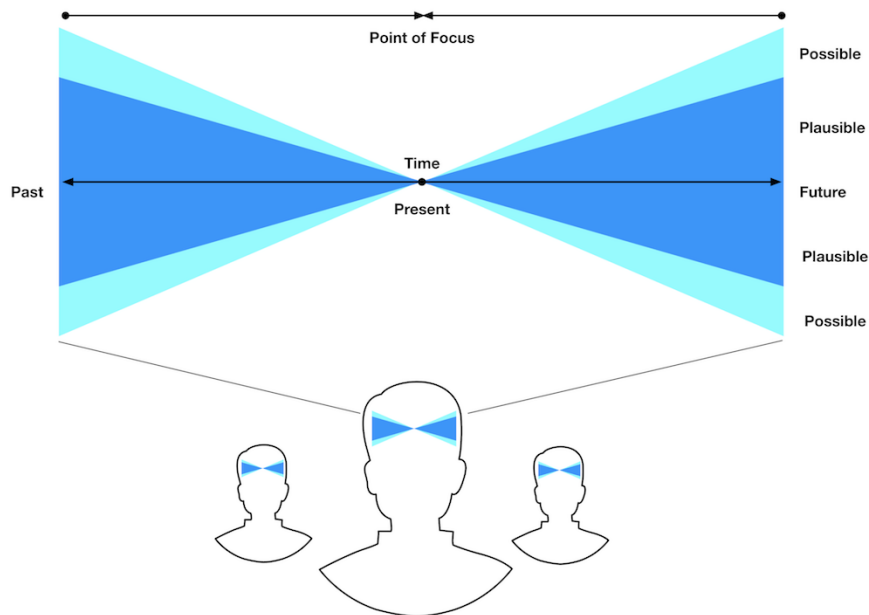


Figure 2.6 A Hermeneutic Model of the Future (Coulton and Lindley, 2017, p. S4639)

positioned in, and focused on, the present, but retains an ability to overlook all of potential time.

For Dunne and Raby and Hancock and Bezold everything begins with the present, the past is erased entirely. While Coulton and Lindley recognise that the past may speak to the future, and Taylor explores both formations. The past appears to be optional when considering the future. Though on what basis that position is established is unclear.

Hancock and Bezold and Taylor draw the present as a ring, perhaps encompassing a breadth of possibilities or even experiences. While for the speculative designers Dunne and Raby and Coulton and Lindley the present is reduced to a single point. It is shown as being one thing.

## 2.4 Design fiction

I will now examine the development of the design fiction method from its initial conception through to its current articulation.



### 2.4.1 Shaping literary things

In Sterling's initial articulation of design fiction in 2005 it is described primarily as a literary endeavour informed by design thinking. The practice highlights the importance of an internal coherence in the story world, a completeness based on a practical credibility. Sterling writes;

I've been writing 'design fiction' for years now. Design fiction reads a great deal like science fiction; in fact, it would never occur to a normal reader to separate the two. The core distinction is that design fiction makes more sense on the page than science fiction does. Science fiction wants to invoke the grandeur and credibility of science for its own hand-waving hocus-pocus, but design fiction can be more practical, more hands-on. It sacrifices some sense of the miraculous, but it moves much closer to the glowing heat of technosocial conflict (Sterling, 2005).

Sterling recognises that this shift toward the practical is also a movement toward a space filled with an inherent dramatic tension, close to the point at which the future is formed from various possible futures, to the process of defuturization.

In 2009, Sterling continues to describe 'design fiction' as an approach to writing science fiction. For him it was a way to counter writing practices that focus too much on the fantastic as a mechanism to create wonder, the 'emotional pay-off' of science fiction. His approach is acknowledged as being a part of a wider move in speculative literature toward the mundane (Calvin, 2009), to a place where the *hard* realities of science are used to ground the fiction and where the 'classic totems of sci-fi', such as the time machine, aren't welcome. He encapsulates the approach as being 'when science fiction thinking opens itself to design thinking' (Sterling, 2009).

Sterling goes on to explore the wider ramifications of this perspectival shift to show how such an approach leads to a new way of knowing. He contrasts the development of early science fiction with that of proto-novels from the 10<sup>th</sup> century to demonstrate the ways in which a 'Literary infrastructure has user-experience constraints' (Sterling, 2009) which shape and are shaped by the communities that use or grow around them. His analysis of the artefacts and the infrastructures that supports them lead him to conclude with a call to action, 'Rather than thinking outside the box—which was almost always a money box, quite frankly—we surely need a better understanding of boxes' (Sterling, 2009). Being alert to capital's role in the construction of infrastructure he asserts a need for a critical understanding of technosocial systems based on artefacts as a base for design fiction thinking.

### 2.4.2 Science fiction and science fact

Around the same time, Dourish and Bell, two influential researchers within the ubiquitous computing community, sought to ‘open up a dialog concerning the technological imagination as it manifests itself within pervasive computing research’ (2014) and to do so they made a comparative reading of science fiction film and television alongside the factual science of ubiquitous computing. To allay chronological concerns it should be noted that versions of their paper had circulated on the internet since 2008. It is the nature of academia that a transdisciplinary act in a disciplinary community might be viewed as being ‘gutsy’ (Bleecker, 2009) or requiring ‘gumption’ (Lindley, 2018). However, their transgression of academic silos was significant both because of their position and because they acknowledged the mutually beneficial nature of the relationship between science fiction and science fact. Where Sterling had drawn fiction closer to fact primarily for literary benefit Dourish and Bell made parallels and described areas of interdependence, before going on to discern benefits for ubiquitous computing and innovation. In doing so, they highlight a need to acknowledge within the ubiquitous computing community the ways in which social and cultural factors ‘are already thoroughly implicated in how a technology is imagined and designed’ (Dourish and Bell, 2014). An acknowledgement of this kind adds to the methodological rigour of ubiquitous computing as it lays bare the assumptions that undergird its work. The later work of Bassett et al. explored the ‘mutual influence’ of science fiction and science fact and highlighted wider implications for

Foresight, horizon scanning, questions of acculturation, the relations between humanities and science and technology, and the broader public understanding of science and participation in the governance of science and technology (Bassett et al., 2013).

In his paper ‘The Future is Now: Diegetic Prototypes and the Role of Popular Films in Generating Real-world Technological Development’ Kirby develops the idea that ‘cinematic depictions of future technologies are actually *diegetic prototypes* that demonstrate to large public audiences a technology’s need, benevolence, and viability’ (Kirby, 2010). The relationship between technological development and cinematic representations is explored through a number of cases in which props are either understood, or intentionally created, as a form of prototype technological development. The diegetic prototype is conceived as an articulation of a *present future* that may draw an envisioned future into the now, into the real-world, as a *future present*.

Bleecker combined and developed the ideas from Sterling, Dourish and Bell and Kirby to posit a different kind of designerly authorial practice. But before I explore that further a brief side note on a literary take on combining science fiction and science fact.

### **A side note on Science Fiction Prototyping**

At around the same time, drawing on the ideas of Dourish and Bell, as well as those of Bleecker, Johnson, a futurist from Intel where Bell also worked, introduces the Science Fiction Prototyping method he developed at the company. He outlines a distinctly literary approach to design innovation and exploration, later describing the method as a form of future casting (Johnson, 2011). A short work of hard science fiction is written by, or commissioned from, a writer whose text must explore the implications of a central idea, a given scientific theory, in the narrative. In this way Science Fiction Prototyping combines literary narrative with contemporary advances in scientific theory in order to allow us to see something of ‘the multiple futures in the theory we are constructing today’ (Johnson, 2009).

Johnson’s position as a corporate futurist has allowed him the freedom to commission best-selling authors, see *The Tomorrow Project* (Rushkoff et al., 2011), and leverage their well-practised imaginations as tools for exploration. The product of these exercises, the stories, are then shared and how believable their audience finds them is taken as one metric for the validity of the prototype, while the invisibility of the science is viewed as another. How these matters are assessed is not mentioned? And who the readership is remains unclear? Though the company has found enough value in the method enough to continue to invest in it over a number of years. From my own perspective, as a reader, I note that the method demands significant attention is paid to descriptions of designed artefacts and systems in a manner that weakens the narrative drive of the fictions.

### **2.4.3 Transdisciplinary practice**

Where Sterling considered design fiction for its literary benefits Bleecker takes a more transdisciplinary perspective, recognising other possibilities from the convergence of design, science fact, and science fiction. He describes design fiction as being an, ‘amalgamation of practices that together bends the expectations as to what each does on its own and ties them together into something new’ (Bleecker, 2009). It is more than design thinking influencing science fiction thinking. In this way he presents design fiction as a new opportunity for transdisciplinarity, arguing that it ‘is a kind of authoring practice that recombines the traditions

of writing and story telling with the material crafting of objects' (Bleecker, 2009). Here Bleecker highlights the potential for prototyping – the 'material crafting of objects' – to be a central part of the design fiction practice, as well as for narrative to take its place. Bleecker also highlights how 'Design fiction creates opportunities for reflection as well as active making' (Bleecker, 2009), an acknowledgement of potential benefits for both the maker and their audience.

While the coining of the term design fiction is generally attributed to Bruce Sterling, he himself attributes it to Julian Bleecker of the Near future Laboratory (Sterling, 2013b). Between the two of them, the writer, Sterling, and the designer, Bleecker, they outline the basis of current understandings of the term.

A formal definition exists: "Design fiction is the deliberate use of diegetic prototypes to suspend disbelief about change."[(Bosch, 2012)] There's heavy freight in that sentence, but most can be disposed of promptly. "Deliberate use" means that design fiction is something that people do with a purpose. "Diegetic" is from film and theatre studies. A movie has a story, but it also has all the commentary, scene-setting, props, sets and gizmos to support that story. Design fiction doesn't tell stories – instead, it designs prototypes that imply a changed world. "Suspending disbelief" means that design fiction has an ethics. Design fictions are fakes of a theatrical sort, but they're not wicked frauds or hoaxes intended to rob or fool people. A design fiction is a creative act that puts the viewer into a different conceptual space – for a while. Then it lets him go. Design fiction has an audience, not victims. Finally, there's the part about "change". Awareness of change is what distinguishes design fictions from jokes about technology, such as over-complex Heath Robinson machines or Japanese chindogu ("weird tool") objects. Design fiction attacks the status quo and suggests clear ways in which life might become different (Sterling, 2013b).

In this expansion on the definition it is evident that the creator of a design fiction prototype aims to generate a critical distance between the real world and the imagined world in order to explore the nature of the present, the possible, and the space between them. Therefore, design fiction examines potential change. So, when Sterling suggests that 'Design fiction attacks the status quo' he reveals a technical intent imbued with political potency. At the heart of the attack is the viewer's act of 'poetic faith' enabled by the designer's work 'to procure for these shadows of imagination that willing suspension of disbelief' (Coleridge, 1984). For Coleridge, the poet, the 'shadows of imagination' were supernatural or romantic

persons, for those engaged in design fiction there is a more technological interest in the stuff of innovation. The purpose, however, remains constant, in that ‘the excellence aimed at was to consist in the interesting of the affections by the dramatic truth of such emotions as would naturally accompany such situations, supposing them real’ (Coleridge, 1984). Design fiction is a transdisciplinary practice centred on the creation of diegetic prototypes, it employs dramatic truth to make believable for the viewer, for a brief moment, a ‘changed world’.

#### 2.4.4 Design fiction as world building

As their work has developed Coulton and Lindley have set aside the concept of *story world* as being too literary a term in favour of the more designerly articulation *world building*. Coulton et al. introduce the concept of design fiction as ‘built worlds’ and argue that ‘the frame can be applied to all Design Fictions’ (Coulton et al., 2017). Reflecting on that argument, in 2018, Lindley draws back slightly and notes that design fiction is ‘still pre-paradigmatic’, but that many potential perspectives are covered by understanding ‘Design Fiction as World Building’ (Lindley, 2018, p. 141). Lindley asserts that ‘*creating the objects that create the world* is the principal task of the designer when creating a design fiction. There is no, and should not be, any implicit concern with storytelling’ (Lindley, 2018, p. 142). While Lindley recognises that the fictional world may be usefully navigated through the use of story or narrative, he argues that it is not necessary to do so. For Lindley, understanding ‘Design Fiction as World Building’ is to the benefit of the development of the method in that it prompts the naive adopter to avoid a literary focus on narrative, plot and character in a design fiction’s generation. Instead it focuses attention toward Lindley’s preferred approach – the interaction between things and people within the world and the ‘cohesion of the world’. Coulton et al. and Lindley’s arguments narrow the possibilities of design fiction as imagined by Bleecker by negating the ‘traditions of writing’ (2009), particularly that of narrative, within a combined ‘authorial practice’. Lindley calls on a 2012 interview with Sterling as a justification (2018, p. 28). Sterling expands on the ‘de-facto definition’ (Lindley, 2018, p. 20) saying,

It’s the deliberate use of diegetic prototypes to suspend disbelief about change. That’s the best definition we’ve come up with. The important word there is diegetic. It means you’re thinking very seriously about potential objects and services and trying to get people to concentrate on those rather than entire worlds or political trends or geopolitical strategies. It’s not a kind of fiction. It’s a kind of design. It tells worlds rather than stories (Bosch, 2012).

To support his argument Lindley takes ‘fiction’ to be synonymous with literature. However, Sterling’s statement ‘It’s not a kind of fiction. It’s a kind of design’ could also be read as a description of intent for design fiction’s use in the design discipline, rather than a negation of the literary. Whatever fiction is in Sterling’s definition of design fiction it is being put to use for design. That use is described simply, it ‘tells worlds’.

As design fiction ‘tells worlds’ it must both determine and communicate them. As it wants people to concentrate on potential objects and services then it must present artefacts or interactions that suggest series of events that describe their possibilities. Telling worlds denotes narrative possibility within the fictional world as defined by the diegetic prototype. Coulton, drawing on Lindley, p. 144, has argued that ‘The artificially built world is a prototyping platform for the very designs that define it, meanwhile those designs reciprocate in kind and prototype the world’ (Coulton, 2020). In 2016, Edwards et al. developed the idea of the same ‘virtuous cycle’ (Edwards et al., 2016) by taking a parallel approach that highlighted narrative through episodic diary entries, a literary approach. For the researcher creating a diegetic prototype, the kind of insights available to them through the generation of a design fiction may be similar whatever the media, be it textual, artefact, or still or moving image.

Whether researchers are supportive of literary approaches to design fiction or more ambivalent they have considered world building to be a uniquely designerly technique (Lindley, 2018; Luu et al., 2018a). However, world building has long been a part of literary practice and is widely taught as part of undergraduate creative writing degrees. It is for design fiction and HCI that it is a newer concern.

#### **2.4.5 Design fiction as narrative**

Design fiction may also be rooted in a distinctly literary foundation (Blythe and Encinas, 2016). Blythe and Encinas argues that technology acts in design fiction as magic acts in wonder tales. That extrapolation, rooted in rationality and scientific progress, is a key technique of some science fiction and some design fiction. That fantastical writing, such as Jonathan Swift’s *Gulliver’s Travels*, shares a common satirical impetus with critical and ironic examples of design fiction. That in both science fiction and design fiction the literary technique of ambiguity is employed to resist the closure of all possibility. Making these connections Blythe and Encinas welcome writerly techniques of composition into design fiction practice. In academia, as researchers have sought to operationalise design fiction

practices, as, or part of, design methods or methodologies, they have explored a range of media and narrative forms.

Design Researchers have experimented with textual forms, including academic narrative forms, such as conference proceedings and paper titles (Kirman et al., 2018), imaginary abstracts (Blythe and Buie, 2014), and fictional research papers (Lindley and Coulton, 2016). Scholarly studies as well as all manner of other objects and practices feature in Sterling's 'Design Fiction Slider Bar of Disbelief' which is organised along a spectrum from holy relics and supernatural objects to 'The ideal and unobtainable "objective truth" about objects and services' (Sterling, 2016b). The investigations noted above explore the potential for narrative scholarly forms to hold fiction rather than fact. In doing so they question how academic forms help to confer authority and aid the suspension of disbelief. The focus on this type of authorship plays to the strengths of the academic researcher as they are already practised in these writing forms. The value beyond academia is less certain.

However, Design Researchers have also explored common everyday writing forms, such as epistles (Thomas et al., 2015) and diary entries (Edwards et al., 2016), as well as other literary narrative practices, such as flash fictions (Ciolfi and Lockley, 2019) and short stories (Ambe, 2020; Hanna and Ashby, 2016; Schulte et al., 2016a) as forms for design fiction. Of these some researchers had professional literary advice or support, some were creative writers as well researchers and others simply experimented for themselves. They have also used preexisting characters and worlds imagined in novels (Blythe and Wright, 2006; Wong et al., 2017) and created board games (Blythe et al., 2015) as inspirations for design fiction concepts. While dramas (Light et al., 2009) and films (Arden et al., 2019; Jain et al., 2015) are most obviously narrative forms. Dillon and Howe argue that it is possible to treat design as narrative (Dillon and Howe, 2003), and so there is an argument that visual forms such as sketches (Sturdee and Lindley, 2019), 3D models of artefacts (Stead, 2016) and artefacts (Franke, 2010) are also narrative forms.

From the examples above it is clear that Design Fiction as Narrative is commonly practised within HCI. Where Design Fiction as World Building centres on the designers determination of fictional artefacts through the authorial practice of prototyping. Design Fiction as Narrative brings into focus the concomitant communication of the diegetic prototype in its fictional world. A communication that takes place across a range of media and through various authorial practices. To 'tell worlds' one must both determine and communicate them. Beyond that Tanenbaum argues that

The interpretation of a reader or viewer—what we might call the user experience—is equally important. Good design fictions incorporate the elements of

good storytelling alongside an understanding of how readers interpret and understand narratives to create compelling (and believable) fictional worlds around an imagined technology (Tanenbaum, 2014).

There are moves to suggest that the world building and narrative approaches to design fiction are more compatible, and interweavable, than the distinctions that have been drawn might suggest (Duggan et al., 2017; Luu et al., 2018*b*).

#### **2.4.6 Design fiction, reception and immersion**

At one level, making a design fiction may be understood as being necessarily participatory, as Tanenbaum noted above, it is similar to a work of literary fiction in that it requires the reader or viewer to complete it. However, beyond this transmission and reception, the discursive space created by design fiction may itself be viewed as a form of participation. It is through this discursive space that audiences of design fiction may variously be invited to comment, discuss, potentially develop and articulate insight, and even inform decision making.

There are a number of close-cousins to design fiction emanating from design, foresight, and HCI, that specifically focus on engaging participation through enactment or role-play. Pantopicon, the Belgian design studio, has made use of role play as part of collaborative futures exercises in conference workshop settings (Baerten, 2023; Rijshouwer and Baerten, 2021, p. 75). In one exercise all participants were ‘members of an institute set in a future world with the sole purpose of producing neologisms as seeds of innovation’ and in another participants joined a fictional assembly meeting of the fictional city of Adrestia. Here, fantastical futures provide imaginative frames for participants’ make-believe. Within these frames participants collaborate as themselves, both playfully and with serious academic intent. Similarly, but more mundanely, Nägele et al. worked affirmatively in a medical industry context to explore the values of vulnerable users with Urinary Tract Infections 10-25 years into the future. Working on a one-to-one basis in an interview setting participants role-played as their future selves as part of world building and prototyping activities (2018).

Experiential futures, sited across foresight and design, (Candy, 2010; Candy and Dunagan, 2017) and Speculative Enactments, bridging HCI and design, (Elsden et al., 2017) are two closely aligned methods that make use of role-play and the embodied responses that it can engender to counter the often abstract nature of futures work in their speculative work. Candy and Dunagan argues that experiential futures move beyond the artefact expressions of speculative design practices to focus on the ‘performative and immersive registers of futures work’ and increase the effectiveness of futures practice (2017). While Elsden et al. explicitly



connects Speculative Enactments to Experiential futures, contending that by making the speculative situation consequential to participants ‘Speculative Enactments create real social experiences with participants’ moving them beyond roleplay (2017).

With speculative possibilities constructed to support collaboration within the carefully defined parameters of a changed world, both of these approaches prioritise immersion of the participant inside the diegesis, helping them enter possible future worlds via acts of make-believe in support of the development of insights.

### 2.4.7 Layering theories

Theories called on by design fiction practitioners are far from fixed and often pass undeclared in the literature. The theory of make-believe (Walton, 1990) and possible world theory (Pavel, 1975) are both used to describe the relation between fiction and fact within design fiction. While Object Orientated Ontology (Harman, 2018) has been introduced to decentre anthropocentric Human Centred Design (Giacomin, 2014) approaches. These theories are briefly discussed below.

#### **The Theory of Make-believe, the Principle of Minimal Departure and Possible World Theory**

Calling on Walton’s theory of make-believe, Dunne and Raby argue that diegetic prototypes or, as they call them, ‘props are objects that “prescribe imaginings” and “generate fictional truths”’ (Dunne and Raby, 2013) as a part of their alternate worlds. According to the The Principle of Minimal Departure (Ryan, 1980; Walton, 1990) ‘whenever we interpret a message concerning an alternate world, we reconstrue this world as being the closest possible to the reality we know’ (Ryan, 1980). So, to engage with the fictional world the audience must at some level compare it to the real world. This idea is further developed by Weisberg and Goodstein who suggest that people

make nuanced inferences when creating fictional worlds, basing their representations both on how different a story world is from the real world and on what they know to be causally central to the real world (Weisberg and Goodstein, 2009).

Markussen and Knutz borrow from poetics to introduce possible world theory which ‘is based on the assumption that fictions can be properly understood as ‘possible worlds’, which can be either easy or difficult to access from our real world’ (Markussen and Knutz, 2013).

Wakkary et al.'s material speculations, develops the use of possible world theory within design, 'as a conceptual framing for reading and creating design artifacts for critical inquiry' (Wakkary et al., 2015). Most recently, Markussen et al. have returned to the subject in an effort to develop the conceptual foundation of design fiction as a practice for researching social change. Taking fictional texts to be analogous with speculative artefacts they present the fictional world (TAW) as a doubling of the real world (AW) that allows for any number of satellite possible worlds to be generated through acts of audience speculation. They also draw on anthropology to explain how 'speculation travels beyond the confines of language and text and becomes entangled in designed material artefacts and their accompanying social practices' (Markussen et al., 2020).

### **Utopia and Dystopia**

In his genre defining literary work of 1516, *Utopia*, More coined two neologism's utopia and eutopia; the former, describes a non-place and, the latter, a good place. Over time the two meanings became entangled in the one word, utopia. In common usage utopia is often understood as a kind of imaginary paradise, or even an impossible ideal and as such it is used to dismiss new possibilities as much if not more than it is to present them. The negative connotations of utopianism are such that some avoid association. Codesigners Sanders and Stappers employ the phrase 'collective dreaming' (2014a), and speculative designers Dunne and Raby use the term 'social dreaming' (2013). However their arguments share what Vieira summarising Ernst Bloch calls 'the principal energy of utopia: hope' (Vieira, 2010). Vieira argues that utopia is a 'matter of attitude, as a kind of reaction to an undesirable present and an aspiration to overcome all difficulties by the imagination of possible alternatives' (Vieira, 2010).

In advancing the idea of utopia as a sociological method Levitas makes the case that

the Imaginary Reconstitution of Society intrinsically necessitates thinking about the connections between economic, social and political processes, our ways of life, and what is necessary to human flourishing (Levitas, 2013).

In further developing utopia as a hermeneutic method Levitas identifies three modes; architectural, archaeological and ontological. The architectural mode – 'involves the institutional design and delineation of the good society – and, in the case of intentional communities or prefigurative practices, its partial concrete instantiation' (Levitas, 2013, p.15), the archaeological mode 'involves the interpellation of absent or implicit elements in political,

literary or artistic utopian ‘accounts’ (Levitas, 2013, p.16), and an ontological mode of utopia ‘addresses the question of what kind of people particular societies develop and encourage’ (Levitas, 2013, p.164) or allows.

Levitas offers an open definition of utopia as ‘the expression of desire for a better way of living and of being’ (Levitas, 2013, p.19) and in so doing argues that it’s purpose is in part the ‘education of desire’. It disrupts our assumptions about the present creating a temporary space to ‘experience an alternative configuration of needs, wants and satisfactions’ (Levitas, 2013, p.19). Sargent notes that one form of utopianism has dominated the cultural landscape since World War I, the dystopia (2013). Dystopia was coined by John Stewart Mill in 1868 as an antonym for utopia, its synonym, cacotopia, was coined by Jeremy Bentham earlier, in 1818, but it is less commonly employed. Dystopia means bad place, and cacotopia adds abnormal, diseased into the mix. Dystopia’s principle energy is fear and despair.

Dystopias may be understood as critical endeavours, whose intention is to act as a warning, in doing so they still serve, like utopia, as an ‘education of desire’. However as a word of caution it should be noted that According to Sargent, Arthur C. Clarke once noted that ‘dystopia is more interesting to write since it gives the writer an almost automatic entry to conflict that can drive a story’ (Sargent, 2013, p .10).

Utopia and dystopia are often seen as antonyms. However both good places and bad places are better understood as non-places, while the opposite of utopia is actually anti-utopianism, it is this concept that ‘actively opposes the imagination and pursuit of alternatives.’ (Levitas, 2013, p .123) Alternative futures are at the core of utopian visions (Vieira, 2010) and at the centre of future studies (Slaughter, 1998). However, Slaughter argues that there is a reductionist binary that limits speculative imagination. On the one hand there is ‘a technophilic and naively optimistic view’ and on the other ‘a bleak future in which the dreams of progress and unending economic development fall back into a chasm of entropy, violence and despair’ (Slaughter, 1998). Such a failure of imagination leads to the following of well travelled ruts, and a track made up of commonplace utopias and dystopias.

### **Human Centred Design and Object Orientated Ontology**

In the area of sustainability Wakkary et al. took a human-centred approach when they linked practice theory and design fiction to explore sustainable interaction design and practices such as green-DIY (2013).

Investigating the acceptability and adoption issues surrounding the Internet of Things (IoT) Coulton et al. describe how design fiction for IoT, an approach underpinned by Design

Fiction as World Building, may help to ‘bridge’ the chasm at the base of the trough of disillusionment in the Gartner’s Hype Cycle model (Coulton et al., 2018). Articulating a technocentric stance they argue that

Design Fiction can help us understand what will enable products to get across the chasm (or what will prevent them from doing so) and, even more importantly, to understand what the world might be like if those products did become widely adopted (Coulton et al., 2018).

The application of design fiction seeks to support the current defuturing of the general IoT discourse by exploring user responses to specific instances of potentially realisable imaginings. Possible opportunities and barriers, as well as a deeper understanding of product areas are exposed through the development of diegetic prototypes. Insights gained from creating and sharing the fictional world are intended to guide real world action in the IoT design space.

Digital actants are treated differently by the adoption of the anthropocentric viewpoint embedded in the predominant HCI approaches within Human Centred Design (Giacomin, 2014). This is problematic for the study of IoT. In response to this issue Lindley et al. introduce Object Orientated Ontology to flatten human-object hierarchies and reduce anthropocentric bias to support future design practice focussed around ‘design for constellations’ (Lindley et al., 2017) of IoT devices. Akmal and Coulton keep adding theoretical layers as they develop a Heterotopical Model for Inter-Spatial Interaction ‘through which designers can examine the coexistence of physical and digital interactions’ (Akmal and Coulton, 2018). It is used in conjunction with Object Orientated Ontology to counter the ‘messiness’ inherent in digital/physical interactions in IoT systems.

Design fiction requires a layering of theories to explain how fictional things generate alternative worlds, as well as how those worlds are treated in time and space as acts of creation and of reception. Foucault’s concept of heterotopia (Foucault, 1984) has more to offer in this area, especially as ‘the concept was never intended as a tool for the study of real material sites, but rather pertains to fictional representations’ (Knight, 2017). Bussey identifies heterotopia as one of six concepts that may benefit futures thinking (2009) by augmenting Inayatullah’s six foundational concepts, six questions and six pillars (Inayatullah, 2008). He argues that heterotopia has ‘import for understanding how transformative praxis can be engaged and new categories for opening up the future developed and deployed’ (Bussey, 2009).

## 2.5 Just add participation

Considering emergent areas in design research and practice (see figure 2.7) in 2014, Sanders and Stappers posit that design fiction as a practice is orientated towards designing-for rather than designing-with people. Though Sanders and Stappers may have been correct at the time of their writing design fiction practice has begun to change. The gap they foresaw has thinned as design fiction practitioners have begun to experiment with participatory approaches and researchers experienced in participation have engaged with design fiction (Lyckvi et al., 2018). So, what happens when we add participation to design fiction practice?

The following section outlines how some researchers have approached the design fiction method through the concept of participation. In an effort to underline the strength of design fiction's flexibility and to counter any weakness implied by its ambiguity Lindley drew on linguistics to propose 'A pragmatics framework for design fiction' (Lindley, 2015). He sets to one side non-critical 'corporate' design fictions, which he terms 'vapour fictions' and highlights two forms of Design Fiction; 'intentional' design fictions and 'incidental' design fictions (Lindley, 2015). I take a similar vein with participatory design fiction and separate 'intentional' participatory design fictions from 'incidental' participatory design fictions by focusing on projects which identify themselves as practising either *codesign fiction* or *participatory design fiction*.

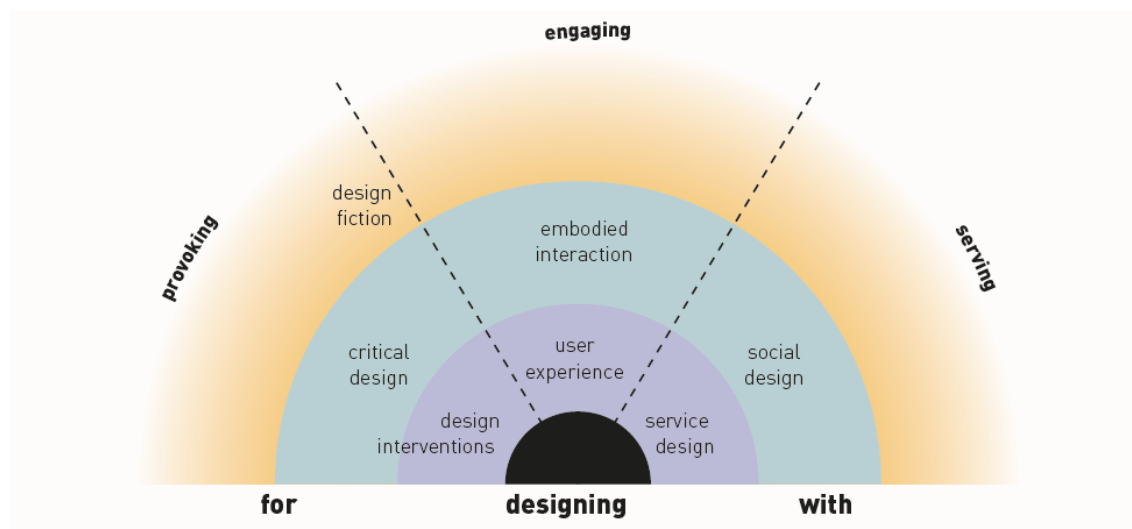


Figure 2.7 Emerging Areas for Design Research and Practice (Sanders and Stappers, 2014b, p. 31)

### 2.5.1 Who participates?

Researchers and participants have different motivations to engage in research projects. Steen highlights two tensions significant across different HCD approaches to research projects

HCD practitioners need to deal with two tensions that are inherent in HCD: they need to combine and balance users' knowledge and ideas with their own knowledge and ideas; and they need to combine and balance a concern for understanding current or past practices with a concern for envisioning alternative or future practices (Steen, 2011).

In order to help visualise the various researcher/user tensions that are adopted in different formulations of participatory design fiction it is useful to consider Steen's laying out of HCD approaches across these Cartesian coordinates (see figure 2.8). As researchers' perspectives, with regard to 'designing-for' or 'designing-with' people (Sanders and Stappers, 2008), are exposed by a project's configuration of participation.

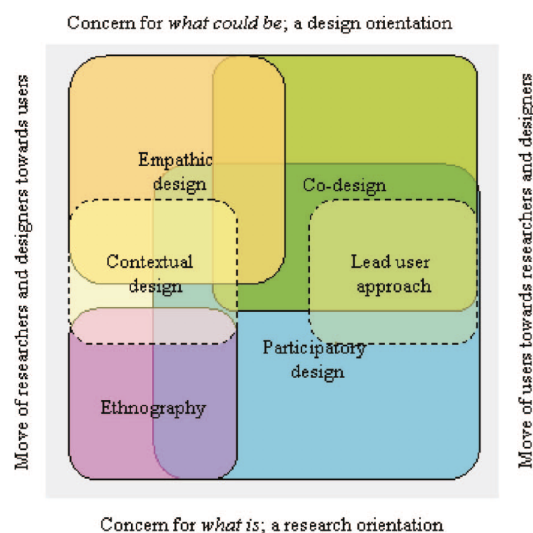


Figure 2.8 Different human-centred design approaches, with different starting points and emphases (Steen, 2011, p. 48)

The following examples of design fiction practice configure participation very differently. An early example of design fiction and codesign practice from 2014, eschewed a consensus-building codesign approach, in favour of exploring the potential of productive conflicts and tensions in urban technology and policy debate. The project invited stakeholders from the host city, who were from the professional class and included designers, scholars, technologists,

activists, policymakers, government leaders, businesspeople, and entrepreneurs, to participate in short workshops creating design fictions for later analysis (Forlano and Mathew, 2014).

Nägele et al.'s work on Urinary Tract Infections adopted a lead user approach identifying sufferers from Europe and the Americas to generate user perspectives on future Urinary Tract Infection medical technology in service of corporate requirements (Nägele et al., 2018). Researchers brought together a globally distributed group around a single shared life experience and these users supported the development of improved products on behalf of all those that share that life experience.

Taking a codesign approach Oliver's project developed a toolkit to support participants in creating their own narrative design fictions (Oliver, 2019). Participants ranked design concepts and one was selected for development as a technology probe (Hutchinson et al., 2003) leading to further insights. Through open recruitment, researchers gathered a disparate, yet geographically accessible, group around an area of shared interest, wearable technology, and supported their exploration of the domain.

Jacobs et al.'s *TrustLens* project combined methods from ethnography, contextual design and participatory design and worked within a single community in Scotland. The project prompted community discussion about fictional IoT deployments and their conversations were coded and analysed to create useful insights for emergent systems and governance (Jacobs et al., 2020). Here participants, bound by geographic and administrative ties, deliver domain level insights whilst also engaging in deliberative democracy. In this way, participants who are taken to be generally representative of wider populations operate as both a user and a citizen.

Another project, which developed 'Co-designed Fictions' as a participatory approach to design fiction as Narrative, frames participation through the participants' protected characteristics. Ambe worked with older adults one-to-one co-creating short stories about future technologies and life in a way that sought to shift 'the creation and writing of design fiction from researchers or designers to the participants themselves' (Ambe, 2020, p. iv).

The configuration, and extent, of participation across different HCD approaches, which included the lead user approach and codesign, as well as a participatory framework that involved elements of ethnography and contextual design was extremely varied. Across these projects, participants were involved based on their professional expertise, on their interest in a strand of technological development, on their experience of a particular place or of a specific life event, and also on their possession of protected characteristics. Most projects, to varying degrees, valued participants as 'experts on their experience domains' (Visser et al., 2005), Forlano and Mathew's work on urban policy highlighted professional expertise, and

the ‘pragmatic proposition’ over the ‘moral proposition’ (Carroll and Rosson, 2007) for inclusion in the research project. As a result in most projects, lived experience operated as one of the fundamental building blocks from which imagining, extrapolation or speculative exploration might emanate.

### 2.5.2 In what?

HCI researchers ‘configure participation’ (Vines et al., 2013) to support their research aims in a variety of ways. Many projects adopt a Design Fiction as Narrative approach within their research design. For example, in Candello et al.’s project (2019), a scenario is presented textually in the form of an “imaginary abstract” and participants individually complete the given fiction and subsequently answer set questions. While in considering future wellbeing technology Ahmadpour et al. gather expert opinion before researcher written stories are produced and shared as probes with a stakeholder group generating discussions (2019). Similarly, Houde et al. drew on expert opinion as they developed three short written scenarios, made up of an original speculation and an extension to that speculation, and shared them with a small group of software engineers to discuss. Probes gave way to prototyping activities as participants were invited to develop the speculation making use of the Story Completion Method (Shah-Beckley et al., 2020) from psychotherapy and psychology, on the basis of worst-case misuse. They were then given the researchers’ extended speculations and invited to discuss the plausibility and severity of all of the scenarios, as well as considering any compounding or abating factors and the extent to which the scenarios might be preventable (Houde et al., 2020). Whereas, Oliver develops a narrative approach, informed by science fiction prototyping (Johnson, 2011), to elicit stories from participants over a series of workshops. She then generated designs and following feedback created a real-world technology probe which was deployed in the wild before further participant reflections were sought (Oliver, 2019).

Fewer projects adopt a Design Fiction as world building approach. In Noortman et al.’s project (2019), a researcher made design fiction, comprising a physical control panel alongside collateral materials, was used as a probe to explore the future of dementia care with two groups. While participants engaged in their homes with the design fiction probe for three weeks, experts, in a more compressed experience, engaged in 1.5 hour one-to-one sessions with researchers. Engagement with the probe was followed by interviews. Jacobs et al.’s *TrustLens* project situated ‘tangible, mundane design fiction artefacts within a participatory framework to facilitate [the] co-design of emerging systems and associated governance processes’ (Jacobs et al., 2020). The project used a Design Fiction as world building approach



within a larger participatory methodology to explore the deployment of public space IoT sidestepping the expense of technology probes while engaging safely with the ethical issues of the deployment.

Some projects work as standalone participatory design fiction studies, while others use the method as part of a larger participatory framework. To build on Muller et al. (2020), the intended outcomes for design fiction practices are threefold. Firstly, there is the design fiction itself as developed by researchers and their collaborators<sup>2</sup>. Secondly, stakeholders may author or co-create design fictions. And thirdly, whether it is created by researchers or stakeholders, the design fiction may be used as a probe to explore the reactions of others. Participatory design fiction practices redraw Sanders and Stappers's diagram (2014b) (see figure 2.9) overlapping the prototyping and probe methods and extending prototyping methods into the pre-design phase of the design process.

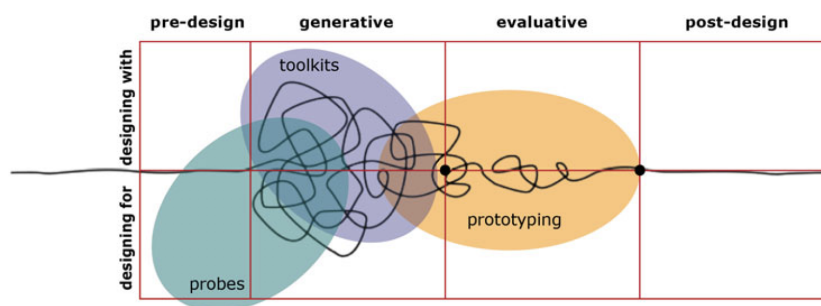


Figure 2.9 Sanders and Stappers's revised framework: three approaches to making are positioned relative to the mindsets and phases in the design process. (Sanders and Stappers, 2014b)

### 2.5.3 To what end?

Often participatory design fiction projects are designed to deliver actionable user insights in affirmative mode. This might be in regard to a specific prototype, such as Blacutt and Roche developing 'a sensory vibration device that supports urban spatiality' (2020) or a particular technology, such as Søndergaard and Hansen on PDA's (2018). It may also be in regard to a class of technologies, such as Nägele et al. on medical technologies for Urinary Tract Infections (2018) or Oliver on everyday wearables (2019). And it might also relate to a setting, such as Schulte et al. in dementia care (2016b) or Baumann et al. on urban design

<sup>2</sup>Heidingsfelder et al. terms these as 'professional design fiction' (Heidingsfelder et al., 2019)

(2016). Interestingly, Baumann et al. grouped together design fictions into a ‘constellation’ that also helped to attract skilled volunteers to the ongoing design process.

Other work focuses more on the discursive space generated by a design fiction. For example, in addition to Forlano and Mathew’s participatory design fiction work on urban policy, noted above, Tseklevs has led a number of participatory design fiction projects with a focus on using design fiction to engage stakeholders in policy debate, including ageing policy with UK parliamentarians (Darby et al., 2015; Tseklevs and Darby, 2016; Tseklevs et al., 2016, 2017) and dementia policy with, and within, an NGO (Darby and Tseklevs, 2018). Tseklevs et al. went on to develop projects on community involvement in Policy-making in Malaysia working with government departments on what to expect from speculative design projects and with community facilitators on how to develop design fiction for policy debate (Tseklevs et al., 2020a,b).

Beyond HCI, there has been a focus on participant empowerment. In Disability Studies, Liddiard and Darby have used participatory design fiction within the context of a two-day research meeting with participants to plan future enquiry. Learning disabled adults, advocates and academics co-produced design fictions and reflected on them through conversations that led to the identification of work packages (Liddiard and Darby, 2016). And in Sociology, Duggan et al.’s *Near Future School* project explored Design Fiction as World building and as Narrative over six workshops with young people and teachers. It did so within the frame of exploring alternative approaches to governance, the project explicitly highlighted the potential of participatory design fiction practices to support participant empowerment (Duggan et al., 2017).

Participatory design fiction practices allow researchers to generate actionable insights for researchers and collaborators across a range of domains, which has proved to be of particular interest in HCI. These practices may also help stakeholders to engage in critical debate at a higher levels, such as governance and policy, and additionally, they have been shown to have the potential to aid participant empowerment.

#### **2.5.4 The gap in the literature**

Design fiction practice has been under sustained investigation for a number of years now and approaches to the practice are establishing themselves. However, participatory design fiction practices are at an earlier stage of development, and there is much in their use that remains unclear. This section has highlighted the range of practices involved in the adoption of participatory approaches to design fiction by researchers in HCI and surrounding fields.

Developing design fiction practice through the lens of participation has been understandably chaotic as researchers with a variety of project aims navigate the area based on competing articulations of design fiction and with differing worldviews with regard to participation. However, most particularly for me, it highlights that where participants' inclusion is based on the moral proposition within participatory design fiction projects too little consideration has been given to how they are generated as a participatory act. Sanders sought to inspire fellow researchers in this territory, stating

I believe that we can dream together now, too. We can invite everyday people to take part in the imagination and anticipation of future scenarios. We can create and use methods of participatory design fiction to reach toward collective dreaming. I am not talking about situations where designers and futurists create future scenarios/environments for others to experience and think about. I am talking about extreme collective dreaming where all the people can collaboratively imagine, create, and then enact their own future scenarios (Sanders, 2017, p. 213).

The research that follows may not fulfil her grand ambition, but perhaps it may prove a useful stepping stone.

## 2.6 Aims, objectives and research questions

This research seeks to explore design fiction as a participatory practice specifically from the perspective of the designer as facilitator.

The objectives of this inquiry are:

- to develop a new approach to the framing of theory in support of a participatory approach to design fiction
- and to identify useful prompts and pivots to practically scaffold a participatory approach to the generation of design fictions in a workshop setting

Through the course of the research study a set of research questions emerged. These research questions are enumerated below:

1. Can a participatory approach be taken to the generation of design fictions?

2. If so, what steps must be taken to support a participatory approach to the generation of design fictions?
3. And, what underpinnings are necessary for a participatory approach to design fiction?

# Chapter 3

## Methodology

The possibilities for conducting a research study are guided by the research questions, the access to particular contexts as well as the skills and interests of the researcher themselves. Below, I set out the basis on which the research study was planned, conducted, analysed and evaluated. Drawing on Crotty (1998, p. 4-5) to give it structure, this chapter gives a justification of the methods used to gather and analyse data in pursuit of the research inquiry and provides an account of the methodology that governed their selection and use. It also outlines the philosophical stance that informs the methodology and describes the theory of knowledge that informs this theoretical perspective, in order to address the ‘extensibility and verifiability’ (Zimmerman and Forlizzi, 2008) of the research outcomes. The chapter also describes the limitations of the research design and the ethical concerns at play within the research study.

### 3.1 Choosing a methodological approach

This section outlines how I navigated the available paradigmatic approaches and articulates my theoretical perspective prior to focusing in on potential research methodologies that could help me to answer my research question.

#### 3.1.1 Paradigmatic approaches

Research questions guide your decisions in every aspect of an inquiry, even when they are held lightly. At the core of my provisional question, ‘How does design fiction operate as a

participatory practice?’ was most clearly the issue of how, but also there were matters of possibility and perspective. These issues were unanswerable using quantitative approaches and so a qualitative orientation to my studies was required. Clearly, I was interested in how design fiction was carried out, but mainly, I was concerned with how it might be done in a particular way. As such, the perspective that I carried into the research inquiry arose in part from the phrase ‘participatory practice’, the particular way, which related to the concept of participation.

As noted in my literature review (see 2.5) there was relatively little work being done at that time from a participatory perspective on design fiction. More importantly however, I felt that reflecting in and on my own practice as a designer facilitator would give me access to more numerous and deeper insights in pursuit of the research study’s objectives. Therefore, as a Design Researcher I was to be both central and evident in the research. Clearly, I would not be adopting a positivist or post-positivist paradigmatic position and attempting to erase myself as a researcher in the name of objectivity. Far from it. To have any chance of approaching my research question I would have to acknowledge the depth of my presence within the formation of the study and engage with my subjectivity as recognised somewhere within the ‘new paradigms’.

The following three subsections address my attempt to position my inquiry within the ‘new paradigms’; Critical Theory, Participatory, and Constructivism (Lincoln et al., 2018).

### **Participatory paradigm**

My interest, as noted in 2.6, was to approach design fiction as a participatory practice from the perspective of the designer as facilitator. A reader might expect that having invoked a phrase like ‘participatory practice’ in my research question that adopting a participatory paradigm as my research stance was something of an inevitability. However, this was not the case.

Two principles central to the participatory paradigm, *epistemic participation* and *political participation* (Heron and Reason, 1997), need to be negotiated if a researcher is to adopt this approach. Epistemic participation and political participation are fundamentally entangled, with the former suggesting that ‘the researchers are also the subjects’ and the latter suggesting that ‘the subjects are also the researchers’. (Heron and Reason, 1997).

The principle of epistemic participation is built on the idea that ‘any propositional knowledge that is the outcome of the research is grounded by the researchers in their own experiential knowledge’ (Heron and Reason, 1997).

Heron and Reason argue that the principle of political participation means that ‘research subjects have a basic human right to participate fully in designing the research that intends to gather knowledge about them’ (1997). However, I was concerned that being fully open to such a *democratization of content* and *democratization of method* may derail or disadvantage the exploration of the design fiction method on the terms I had set. My position was informed by an initial uncertainty regarding my approach. I was unsure of what elements of design fiction were essential and therefore how much directional control I could realistically cede while navigating the specific demands of my research inquiry. This was an indication of something of a deficit in the ‘democratic personality’ (Lincoln et al., 2018, p. 110) necessary to negotiate the direction of inquiry with any co-researchers. It was not an issue of will – I would have dearly loved to effectively support my co-researchers through the design fiction process – but rather one of knowledge, I did not yet know how to do so. This touches to the heart of my inquiry.

### **Critical theory paradigm**

Critical theory aims to critique the historical and cultural forces that act on people. While it is oppositional and emancipatory in ambition it is focused on awareness and is not necessarily orientated towards transformation (McNiff, 2013, p. 50). Participatory design fiction practices were not, and are still not, common. Their availability for study is extremely circumscribed. The lack of an object of study was therefore an insurmountable problem to my adoption of critical theory as a research paradigm.

### **Constructivist paradigm**

Within the constructivist paradigm, Lincoln and Guba highlight the centrality of the (design) researcher to the research process, the *natural setting* where practice takes place, that *tacit knowledge* is found through doing (like Schön’s knowing-in-action (Schön, 1983)), and that practice-based research methodologies are *emergent* and produce *ideographic interpretation* that is situated and of limited generalizability (Lincoln and Guba, 1985).

The constructivist, or social constructivist, paradigm is regularly used in qualitative research and Cresswell notes that ‘the goal of the research is to rely as much as possible on the participant’s views of the situation being studied’ (Cresswell, 2009). Given the context of the research – the act of facilitating of design fictions – this placed the designer-as-facilitator as a key participant. The approach adequately allows for my position as a researcher within the study. It also highlighted a requirement; a suitable external context, or natural setting. Only

by conducting the facilitation of design fiction with a participant group within an external project could my research question be satisfactorily approached.

### 3.1.2 Theoretical Perspective

My thesis is broadly constructivist, though it is also informed by broader participatory concerns. The following two sections highlight my background and socio-political intent in order to position myself as the researcher within the study.

#### Researcher background

It may be useful at this point in the thesis to quickly note something of the background and experience that I bring to the research project.

I'm a middle-aged man who mostly passes White, but is actually of dual heritage; British and West Indian. I am from the north of England and the lower socioeconomic classes. Politically I am to the centre left. I'm divorced. I have four children aged between thirteen and twenty-one years; two biological and two non-biological. My partner is deaf. One of my children is physically disabled, two are bisexual, and all of my children are neurodivergent in different ways. I have had the opportunity to observe the ways in which the world treats different people and I am very used to seeing the world in terms of the critical theorists' ontological perspective,

Human nature operates in a world that is a struggle for power. This leads to interactions of privilege and oppression that can be based on race or ethnicity, socioeconomic class, gender, mental or physical abilities or sexual preference (Lincoln et al., 2018).

If, as Simon claims, 'Everyone designs who devises courses of action aimed at changing existing situations into preferred' (1988) then despite having no formal training I have been designing. Once I understood that 'design has no special subject matter of its own apart from what a designer conceives it to be' (Buchanan, 1992) then I recognised that I had been designing most of my life. On the personal front, I redesigned my own house to accommodate the developing needs of my eldest child after they were born with a rare form of cerebral palsy which manifests as quadriplegic spasticity. In my professional life working in the arts I designed, and guided the graphic design, of leaflets, magazines and books. I designed ebooks and websites for several organisations. I designed stage sets and outdoor performance



settings. And I contributed to larger design-led projects by working as a commissioning editor and guiding the creation of narrative elements to fit the requirements of both the story world and public art sculptures in the real world. I also worked closely with designers and architects on a number of building projects over the years. I designed, directed and led arts work in schools, youth clubs, libraries, community centres, hospitals, hospices and prisons with many different participant groups.

I come from a literary background working with non-writers and writers in poetry and prose fiction. However, I came to the research of design fiction with a purposefully designerly approach. I wanted to understand what a 'designerly approach' (Cross, 2001) to fiction meant and what it offered. I also come to the research aware of the criticisms of speculative design and whose voices are heard in that rarefied world (Martins, 2014).

### **Socio-political intent**

In response to the question, 'Why writing?' the acclaimed Science Fiction writer Octavia Butler responded, 'You got to make your own worlds. You got to write yourself in. Whether you were a part of the greater society or not, you got to write yourself in' (Butler, 2000). If I had to answer a similarly formed question about my research, such as 'Why participatory design fiction?', I would respond that I believe that people of all backgrounds should be party to the debates about the future that design fiction can enable, whether the focus be technological or social, or both. With the participatory principle of *nothing about us without us* in mind I believe that authoring design fictions to initiate debate to engage others in discussion about the socio-technical systems that bind us is both socially and politically important. As such, one of my motivations for exploring a participatory approach to design fiction is to consider ways to engage other voices within the technological discourse and to value the contribution that these voices can make in debates. This motivation also recognises constructivism's relativism and a plural, contested and co-created formation of realities (Lincoln et al., 2018, p. 100).

### **3.1.3 Research Methodologies in Design**

Cresswell identifies ethnography, grounded theory, case studies, phenomenological research and narrative research as key strategies for qualitative research and also mentions briefly participatory action research and discourse analysis (Cresswell, 2009, p. 13). However, Gray and Malins provide a more immediately useful, if slightly dated, overview of methodological

approaches from ‘new paradigm research’ in Art and Design, describing; the ‘bricoleur’, action research, systems and inquiry by design (Gray and Malins, 2016). I outline the main characteristics of each under their respective headings, below, and consider their relevance to the research undertaking.

### **Bricolage**

Within the design discipline bricolage has been broadly described as a metaphor for design practice (Louridas, 1999*a*) and also as ‘a way of making which draws on what is already there both culturally and materially’ (Vallgård and Fernaeus, 2015). At the centre of the idea in design research is the researcher as ‘bricoleur’, who adopts a multi-method approach to qualitative research, choosing, adapting and inventing a coherent set of methods to resolve the research question in a coherent fashion. Denzin and Lincoln describe the qualitative researcher as ‘bricoleur’ as someone who

uses the aesthetic and material tools of his or her craft, deploying whatever strategies, methods, or empirical materials are at hand. If new tools or techniques have to be invented or pieced together, then the researcher will do this. The choice of research practices depends upon the questions that are asked, and the questions depend on their context, what is available in the context, and what the researcher can do in that setting (Denzin and Lincoln, 2011).

Gray and Malins describe the outcomes of such research as being ‘a bricolage – an emergent construction’ (Gray and Malins, 2016). This bricolage is ‘a pieced-together set of representations that are fitted to the specifics of a complex situation’ (Denzin and Lincoln, 2011). It is clearly an option to approach my research question as a bricoleur, though special attention would need to be paid as to what might constitute materiality across the topic area and how best to present a bricolage that would communicate effectively to the design community.

### **Systems**

‘Soft’ Systems methodologies (SSM) is an ‘action-orientated process of inquiry in which users learn their way from finding out about the situation, to taking action to improve it’ (Checkland and Poulter, 2020, p. 191). Developed by Checkland, it employs a collaborative process to co-produce a holistic understanding of a system. A system is understood as ‘any kind of complex, changing situation or context’ (Gray and Malins, 2016, p. 74). The system

may be visualised through various types of mapping and communication techniques, such as diagrams, charts, graphs and pictures, known in the lexicon of SSM as ‘rich pictures’. While I considered that some of the visualisation approaches common in SSM might prove useful in exploring the range of concepts and relations at play in design fiction work, I did not see how SSM could be a useful strategy to address a process-orientated research question.

### **Action research**

Action research is a form of practice-based research with ‘critical self-reflective practice’ at its core, it is an enquiry ‘by the self into the self, with others acting as co-researchers and critical learning partners’ (McNiff, 2013, p. 24). McNiff suggests that the methodological implications of action research are such that they require a deep reciprocity of judgement between co-researchers and researcher to allow full accountability in our practices (2013, p. 31). Adopting action research as a methodology generates similar concerns to those discussed regarding the participatory paradigm (see 3.1.1). However, there are two ways that I might adopt action research within my study. Firstly, first-person action research (Reason and Bradbury, 2008, p. 6) could be used. This is where ‘an individual practitioner reflects on their own personal practice and offers an account of what they are doing and thinking’ (McNiff, 2013, p. 55). However, I have reservations here as *personal practice* and exploration of *potential personal practice* have different attributes. Secondly, McNiff notes that action research is not only a methodology, for example Reason and Bradbury considers it an *orientation to inquiry* (2008, p. 1), as such it may also be used as a technique or strategy as part of a ‘change process’ (McNiff, 2013, p. 54). Adopting action research as a technique makes sense to me as it allows a researcher to focus on developing through an action-research cycle of planning, acting, observing and reflecting.

### **Inquiry by design**

Gray and Malins tentatively review the concept of *inquiry by design* (Zeisel, 1984), adopting Zeisel’s terminology, to consider the potential in the relations between practice and design (Gray and Malins, 2016, p. 76). Developing a more robust appreciation of the possibilities of this approach, Archer has argued for the appropriateness or fitness of *research through practitioner action* in some contexts. He states that

There are circumstances where the best or only way to shed light on a proposition, a principle, a material, a process or a function is to attempt to construct something, or to enact something, calculated to explore, embody or test it (Archer, 1995).

However, a more useful term to cover practice-as-research, as it has developed more recently in the design discipline specifically, is 'Research through Design'. Frayling sums up the approach with a question inspired by E.M. Forster's aunt, he asks, 'How can I tell what I think till I see what I make and do?' (Frayling, 1993) As I have attempted to make sense of potential methodological approaches to help me engage with my research question Frayling's question has remained foremost in my mind.

Crotty suggests forming your own methodological approach around the needs of your research question, stating that 'the focus of our research leads us to devise our own ways of proceeding that allow us to achieve our purposes' (Crotty, 1998, p. 13). One might broadly characterise my methodological approach within this study as adopting elements of bricolage and action research under an umbrella of Research through Design.

## **3.2 Research through Design**

Bruce Sterling claims that 'the best way to understand the many difficulties of Design Fiction is to attempt to create one' (Sterling, n.d.). My research necessitated me to understand design fiction and to understand it as a participatory practice. Research through Design (RtD) recommended itself to me as an investigatory and exploratory approach because I felt it was the only way I would be able to respond to the initial topic area as defined by my provisional question. It seemed fitting to adopt RtD as an approach when in the early days of my PhD research there were few examples of design fiction that might be described as taking a participatory approach to design fiction. It is difficult to research that which does not exist without yourself drawing it into existence, so the only step to take was to engage in the making of some kind of participatory design fictions.

### 3.2.1 Brief history of Research through Design

The term Research through Design describes a ‘practice-based inquiry that generates transferrable[sic] knowledge’ (Durrant et al., 2017). It arose through dialogue between Frayling and Archer as they explored different practice models for Art and Design as a means of research. Frayling’s practice model describes research *into* art and design, research *through* art and design, and research *for* art and design (Frayling, 1993). While, Archer’s outlines ‘research about practice; research for the purposes of practice; and research through practice’ (Archer, 1995). Durrant et al. describe how these articulations have since been critiqued in regard to working contexts and knowledge creation, as well as in relation to ‘design education, professional practice, its relationship to epistemology, and the challenges of its dissemination’ (Durrant et al., 2017).

Research through Design has been variously described as a ‘method’ (Zimmerman et al., 2007), a ‘research approach’ (Gaver, 2012; Rodriguez Ramirez, 2009; Zimmerman and Forlizzi, 2008), ‘an orientation to so-called ‘Third Wave’ Human Computer Interaction’ (Bowers, 2012) and as ‘an inquiry methodology’ (Bardzell et al., 2015). However, Durrant et al. argue that

research through design is not a formal methodological approach with a particular epistemological basis. Instead, it is a foundational concept for approaching inquiry through the practice of design (Durrant et al., 2017).

Whatever the approach taken to Research through Design, it brings focus to the moves that designers make to sketch, model and prototype their way towards ‘producing an ultimate particular in the form of a thing that suggests a future state’ (Zimmerman and Forlizzi, 2008). Here, Zimmerman and Forlizzi draw on Stolterman who states that design is ‘about the unique, the particular, or even the ultimate particular’ (Stolterman, 2008, p. 59). However, the key issue here is how design actions are operationalised for the purposes of research and what we might expect of these practices.

### 3.2.2 Expectations of Research through Design

In his paper, ‘What Should We Expect From Research Through Design’ Gaver suggests that RtD at the intersection of Design and HCI should “take pride in its aptitude for exploring and speculating, particularising and diversifying” (Gaver, 2012). He positions his argument alongside rather than in opposition to other approaches to RtD in HCI while resisting calls

for convergence within the field as a potentially harmful constraint to its development. He provides a foundation for practice-based design research to be built on the particularities of designs. He recognises that RtD “is likely to produce theories that are provisional, contingent, and aspirational” (Gaver, 2012) and outlines several ways that researchers might expect to draw out theory from RtD studies. In doing so he describes the theoretical terrain at different scales, from ‘implicit conceptual work’ that includes descriptions, discussions and assessments of influences, rationales and judgements about the work, through to presentations of meta-theory characterizing RtD itself. Along the way he touches on the borrowing of conceptual perspectives from other disciplines and their relevance for design. He notes the role of manifestos as they build accounts for future practice and the theoretically weaker role played by frameworks in implying conceptual orientations. With this account Gaver usefully acknowledges a breadth of possible theoretical contributions and framings that arise from RtD and given this wide potentiality I was confident in approaching the topic area directed by a provisional query. My final research questions emerged in dialogue with the topic area through the practice of the RtD method.

### **3.3 Research Methods**

The activities I conducted within the bounds of the RtD method sought to respond to the research agenda in two ways. Firstly, by focusing on design as a prototyping activity, and secondly, by adopting design as a reflective process. Both of these orientations toward design practice were guided by participatory concerns. Prior to describing these two orientations I briefly outline the central activities within my research study below.

#### **3.3.1 Research Context Overview**

Within the research programme as a part of two external projects (see subsection 3.4.2), ProtoPolicy and What If?, and across several codesign workshops, project participants generated insights, speculations and design concepts in response to policy points and various facilitation processes. The acts of design facilitation required to scaffold and run the codesign workshops relied on the creation, adaptation, refinement and use of a number of design tools. The participants’ responses were then used by the external projects’ Speculative Designers and Design Researchers to guide the creation and development of a number of diegetic prototypes and design fictions. Separately, and in parallel, the development of visual communication artefacts created through reflection in and on the design fictions, diegetic

prototypes and design tools, as well as the participatory processes at play, continued outwith the external projects.

### 3.3.2 Design as prototyping

Design is born of specific, situated concerns, Stolterman argues that ‘The final measure of success for a design is something revealed in location, in real use, and over time’ (Stolterman, 2008, p. 59). In this articulation, the design of an object or a process is equivalent, new knowledge comes in the context of its specific use.

‘Design and prototyping have been interwoven throughout history’ (Camburn et al., 2017). Camburn et al. observe that in industry refinement, communication, exploration and active learning are the main objectives of prototyping (Camburn et al., 2017). *Refinement* addresses the need for gradual improvement, *communication* the sharing of information among the design team and potential users, *exploration* focuses on ‘seeking out new design concepts’, and *active learning* aims for new knowledge about the design space. RtD operationalises these properties of prototyping in design research. Stappers proposes a tentative list of the ways in which prototyping operates in design research. They include, prototypes being used to confront theory, confront the world, evoke discussion and reflection, change the world and to test a theory (Stappers, 2014). In *confronting theory*, when building prototypes for use, one cannot hide in abstraction, one must face the various theories that the prototype, ‘typically a complete solution’, requires. In *confronting the world* prototyping addresses the need for specificity in a ‘concrete instantiation’. In *evoking discussion and reflection* prototyping charges communication. In this way prototyping is not only ‘to test and prove’, but also, here Stappers draws on Mogensen’s provotypes, to ‘provoke reflection, experimentation and discussion’ (Mogensen, 1992). In *changing the world* prototyping acts as an embodiment of possible futures allowing them to be explored, in a similar way to Action Research. And finally, in *testing a theory* ‘a prototype can serve as an embodiment for a hypothesis, realising the conditions (independent variables) in an experiment’ (Stappers, 2014).

My research interest encompasses both process and product and is embodied in a range of prototypes. At one level my interest is in the products that arise from the workshops; the design fictions, the diegetic prototypes and the design concepts. While at another level I explore the tools and techniques that supported my facilitation of a participatory approach to the creation of design fictions. At this level the prototypes of interest are the design tools that I created and adapted as part of the workshop processes, and also the specific project designs, the formulations of which I worked within, that experimented with design fiction practice.

Though all of these products were generated through two research projects, they vary greatly in many other respects. In his argument in support of annotated portfolios, Bowers describes how annotations bind together a disparate set of artefacts. Those things that cannot speak for themselves, the artefacts, are given voice through annotation, 'They are annotated so as to show how they fit into a portfolio of related endeavour' (Bowers, 2012) making sense of design choices that are 'varied, multifaceted, and heterogeneous' (Bowers, 2012). They can serve a 'valuable role as an alternative to more formalised theory in conceptual development and practical guidance for design' (Gaver, 2012).

### **An annotated portfolio? Of what exactly?**

An annotated portfolio is a collection of artefacts brought together as a portfolio by the act of annotation. Within the portfolio artefacts are illuminated by annotations and annotations are illustrated by artefacts in a mutually reinforcing cycle that enable a mesh of similarities and differences to be captured communicating the nature of the portfolio (Gaver, 2012).

I adapted the annotated portfolio method described by Gaver to accommodate the needs of my research programme and more particularly in response to the literature, this is elaborated on in sections 5.1.2 and 5.1.1.

When considering design as prototyping and selecting an appropriate portfolio I have been deliberately inclusive. The final design fiction films, the diegetic prototypes and the design concepts and speculations are all considered. The rationale for this decision is based on the different forms of material engagement required by the design fiction method. Making in design fiction is threefold; there is the making of the output media, the making of digital and physical props or prototypes and to set everything in motion the making of leaps of the imagination. The material engagement demanded by each kind of making is considered to allow me to accommodate insights emanating from the prospective nature of design alongside the fictive attributes of the design fiction method. In taking such an inclusive approach I am also introducing the possibility that occasionally imbalanced associations and uneven comparisons may be drawn between the work of a professional speculative design expert, a design researcher, and that of the novice co-designers of the participant group.

### **Annotations on Design Concepts**



As part of the ProtoPolicy project four design concepts were developed from the first workshop (P1) by project collaborator Bastien Kerspern of Design Friction. He produced four single-page design concepts entitled; ‘The Smart Things Therapist’, ‘Euthanasia Wearable’, ‘The Presence’ and ‘The Swarm Transport’. While, three design concepts were developed in the (P2) sessions by project participants and captured as video pieces by Josh Butcher of Joint Effort Studios. These three design concepts featured; a pool table for the partially sighted, holochat technology, and a brain scanner to catch mis-prescribed antibiotics. As part of the What If? project participants developed two design concepts within the Age UK National Office workshop (WI2) entitled Easing the burden on informal carers and The Multi-monitor.

### **Annotations on Diegetic Prototypes**

As part of the ProtoPolicy project, ‘The Smart Things Therapist’ and the ‘Euthanasia Wearable’ design concepts were taken forward for further development. During this process ‘The Smart Things Therapist’ was renamed ‘The Smart Object Therapist’, while ‘Euthanasia Wearable’ became ‘Soulaje’. Three diegetic prototypes were created for the Smart Object Therapist design fiction; a Job Description, an Intervention Report and a Reconciliation Guide. While three diegetic prototypes were created for Soulaje, these included; a User Guide, a protest flyer against the euthanasia wearable and the euthanasia wearable itself. The What If? project took The Multi-monitor forward creating a number of diegetic prototypes under the title, Mentian. These diegetic prototypes all worked under a single heading, the Mentian™ Consultation System, and included, a Product Information Sheet, a Sensor Array, an Authorisation Card, and a computer processor housed in a piece of furniture – a kind of medical table.

### **Annotations on Design Fictions**

Finally, two short design fiction films, The Smart Object Therapist and Soulaje were produced as part of the ProtoPolicy project, and one short design fiction film, Mentian, was produced as part of the What If? project.

### **3.3.3 Design as reflective process**

In describing what they describe as Authentic Design Practice, Bowen et al. outline strategies that draw on the work of Cross (2001), Schön (1983), Lawson (2005), and Buchanan (1992), specifically; co-evolution of problem and solution, making an enquiry, developing and

adopting frames and contextual immersion. They argue that these strategies provide an outline of ‘designing as a *methodology*’ (2014). Here, I highlight contextual immersion and making as enquiry as key strategies within my research study.

### **Contextual Immersion**

In line with Bowen et al.’s observations on contextual immersion in the work of Schön and Stolterman, where they note that ‘the designer selects and refines their approach through immersion in the design context’ (Bowen et al., 2014), I immersed myself in the design context by engaging in two external projects that specifically necessitated that design fiction was undertaken as a participatory practice, see section 3.4 for detail. These external projects demanded almost immediate action and I relied on past experience to inform my design facilitation choices in working with the various participant groups. The project workshops provided a *natural setting* for the design facilitation and placed the designer researcher central to the research process in line with key paradigmatic characteristics. This process also allowed me space and time to reflect in and on the two external projects as well as the individual workshops themselves, and the facilitation techniques employed.

### **Making as enquiry**

During that contextual immersion, I made a set of visual communication artefacts in parallel with the development of the tools and techniques that supported my facilitation of a participatory approach to design fiction. I wanted to develop and hold ideas of the relations between concepts tentatively, sketching possibilities, while avoiding fixing them in text. As such the development of this set of artefacts was a reflective act. They were developed through reflection in, and on, (Schön, 1983) the external projects and the design tools, diegetic prototypes and design fictions that were the products of their implementation. This reflective practice was carried out in conjunction with my engagement with the available design fiction literature.

In making as enquiry, and particularly through sketching, ‘a designer works out a potential solution to a potential problem and is then able to reflect upon the relevance and implications of both’ (Bowen et al., 2014). This practice may be viewed as a *bricolage* (Denzin and Lincoln, 2011) exploring the complexity of the design fiction process through various mappings and artefacts.

### **Making what exactly?**

Through the development of various charts, tools and artefacts aesthetically set in the past I was able to materially explore aspects of fiction and worldbuilding in design. While also grappling with some of the conceptual difficulties that taking a participatory approach to design fiction foregrounds I visually explored various concepts and their relations.

### **Making - Visual Communication Artefacts**

The following Visual Communication Artefacts were developed as interconnecting pieces.

Made from a leather prototyping split, the base layer was titled, *A Portolan Chart of utility to the creators of Participatory Possibilia in navigating the seas of Possibility as they seek to lay eyes upon the edges of Near Future Possible World* (see figure 4.2).

A number of wooden artefacts were designed to sit on top or to the side of the Portolan Chart. These included, a Theory Board (see figure 4.5), a Volvelle (see figure 4.6), and a Paper Theatre (see figure 4.7, as well as a number of pieces that point to the fluid nature of relationships between other elements and hold blank cards for completion, or that invite the viewer to focus more on a particular part of the Portolan Chart.

### **3.3.4 Knowledge validation**

Cresswell suggests that a minimum of two of the following strategies; ‘prolonged engagement, triangulation, peer review or debriefing, negative case analysis, clarifying researcher bias, member checks, thick description, and external audits’ (Cresswell, 2009, p. 21) are required to establish validity. While I recognise that clarifying researcher bias and thick descriptions have a useful role in my research study positioning my undertaking and providing a route to deep insights. I have not adopted the realist ontology of ‘subtle realism’ (Hammersley, 1995) to attempt to ensure the validity of qualitative inquiry through a positivist foundational grounding. Instead, I align myself with Angen who emphasises validation over validity to highlight the ‘the way in which a judgment of the trustworthiness or goodness of a piece of research is a continuous process occurring within a community of researchers’ (Angen, 2000, p. 387).

The knowledge I present in this thesis is formed within the constructivist paradigm, it is ‘negotiated – inter-subjective, context bound, and is a result of personal construction’ (Gray and Malins, 2016, p. 21) and as such the ‘outcomes will be suggestive rather than conclusive’

(Crotty, 1998, p. 13). Below, I briefly address two types of validation, ethical and substantive in support of my claim to provide trustworthy knowledge.

Ethical validation requires us to offer ‘practical, generative, possibly transformative, and hopefully nondogmatic answers to the questions we pose as researchers’ (Angen, 2000, p. 388). As I write, I cannot answer to the pragmatic value of the research described, as ‘the practical value of a piece of research unfolds into the future as the interpretation is taken up by the community of practitioners’ (Angen, 2000, p. 388). Though I have written some papers based on this topic, the ideas discussed in this thesis had not yet coalesced. As such, the submission, defence and publication of this thesis will form only the beginnings of any pragmatic validation of the knowledge herein. However, within its confines I attempt to offer knowledge that has a ‘voluptuous’ or ‘rhizomatic’ (Lather, 1993) capacity that may give rise to others’ research efforts. Though the structure is traditional, the form and content of the findings and discussion chapters acknowledge and attempt to make use of the metaphor of the crystal as an approach to validity (Lincoln et al., 2018, p. 122).

Crystals grow change alter, but are not amorphous. Crystals are prisms that reflect externalities *and* refract within themselves, creating different colors, patterns, arrays, casting off in different directions. What we *see* depends upon our angle of repose. Not triangulation, crystallization (Richardson, 1997, p. 92).

The adapted annotated portfolio and the *bricolage* are in conversation with each other and different aspects of them are developed and brought into sharper focus in the discussion chapter. The intention being that ‘Crystallization, without losing structure, deconstructs the traditional idea of “validity” (we feel how there is no single truth, [and] we see how texts validate themselves);’ (Richardson, 1997, p. 92).

Recognising the importance of substantive validation I attempt to face head-on ‘criticisms of subjectivity... ..with evidence of what has been brought to bear on the interpretation’ (Angen, 2000, p. 388). Within this thesis I offer a written account of my own understandings of the topic developed through reflection on the research process and outputs, my own reflexivity, that is ‘the process of reflecting critically on the self as researcher’ (Lincoln et al., 2018, p. 124), as well as understandings from other sources, and I give consideration to their interplay within the terms of the study. In this way I have sought to provide evidence of the thoroughness and comprehensiveness of my undertaking.

### 3.3.5 Summary

In line with the constructivist paradigm I have positioned myself as a researcher in relation to the research study. In order to access the topic area of my research questions I selected a practice-based research methodology and I have given an overview of the *natural setting* of the projects in which I was contextually immersed. To address my research questions I adopted design as a methodology. I have also acknowledged the influence of the bricoleur to aspects of my process. Specifically, I have used research through design with an adapted annotated portfolio, alongside making an enquiry with reflection in, and on, action as research methods. Finally, I addressed issues of knowledge validation in both ethical and substantive terms.

## 3.4 Research Study Context

Two research projects provided my PhD research study with a context in which to explore participatory approaches to design fiction. I operated as a design researcher and facilitator in both the ProtoPolicy and What If? projects, which allowed me a unique position from which to reflect both in, and on, their workings (Schön, 1983) whilst pursuing my own distinct research agenda. ProtoPolicy, the first external project, aimed to investigate the potential of design fiction in helping politicians and community groups imagine the future implications of policy initiatives in creative ways. In so doing, the project sought to explore the use of design fiction to negotiate political questions and to increase political agency among the participant groups. The project's primary research question was, 'Can the use of design fiction be a viable method for community groups to increase political agency and for negotiating political questions?' The principal investigator, my supervisor, Dr Tseklevs, went on to develop a second project, entitled What If? which offered me further opportunities to engage with design fiction in the field. What if? was an impact and knowledge exchange project, which aimed to build on the achievements of the AHRC-funded ProtoPolicy project to further test the use of design fiction as a means of engaging with critical policy questions.

### 3.4.1 Opportunity

My decision to focus on design fiction was taken somewhat serendipitously, as an opportunity to facilitate a live research project was presented to me on relatively short notice. At the same time, I had been considering how to develop the work on design fiction that I had conducted

as part of my masters' studies. Prior to my involvement, the ProtoPolicy project had been funded and the structure, and timeline, of the project had been decided. At the point at which, Dr Tseklevs, my supervisor, and I agreed to work together, on June 4th, 2015, the first workshops were due to take place imminently. As a result, my first concern was the design and delivery of a design fiction codesign workshop. My immediate priority was to establish the facilitation requirements of the workshop process and select and prepare the design tools required for it, more as a job of work rather than as a research study. So, from the outset of the PhD study I held the questions of how design fiction might be created and indeed understood through, and in, participatory practice quite loosely while pursuing the research aims of an external project. I did not review practice in speculative design with regard to participation or participatory design with regard to speculation, though I was familiar with the small amount of literature specific to design fiction that was available at the time as a result of my previous studies.

### 3.4.2 Two External Projects

As mentioned previously, two external projects ProtoPolicy and What If? provided the setting for a series of codesign workshops. For the sake of clarity, I will briefly review their **topics**, **agendas** and impact on my **autonomy** within the research study.

The ProtoPolicy project was part of the Arts and Humanities Research Council-funded project ProtoPublics, which aimed to support researchers and community partners to become active participants in 'crafting new services, experiences, projects and policies that address contemporary issues' (Julier et al., 2015). ProtoPolicy focused on issues of ageing in place and isolation. It aimed to investigate how design fictions could be used to help politicians and community groups imagine the future implications of policy initiatives in creative ways. My role was to facilitate a series of codesign workshops with older people and to further develop the speculative artefacts created by the Design Friction studio in response to those workshops. Within this frame, and operating in regular dialogue with my supervisor, I had free reign to work as I wished.

What If? was an impact project funded by Lancaster University that built on the work undertaken in the ProtoPolicy and ProtoPublics projects. It pivoted to focus on issues relating to dementia and government policy. It aimed to further investigate how design fictions could be used to help community groups imagine the future implications of policy initiatives in creative ways. My role was to facilitate a series of codesign workshops with older people

and to create speculative artefacts in response to those workshops. Once again, I had free reign to work as I wished.

My focus in the external projects' workshops was to support and guide participants toward the generation of codesign design fictions in response to policy initiatives. In the following paragraphs I briefly outline the workshop programme that was undertaken for each project, highlighting the location, recruitment process, and the participant group make-up, numbers and age range to provide context. I then go on to outline the demographic make-up of the participant group. In this way I establish the context in which my research took place.

### **3.4.3 ProtoPolicy Workshops Breakdown**

Firstly, the ProtoPolicy project featured three workshops, two in Lancashire and one in Cornwall, which took place between June and September 2015. The venue for the Lancashire workshops was The Centre @ Halton, a locally managed community centre, while the venue in Cornwall was the Miners Court sheltered accommodation. In the Lancashire sessions, recruitment was conducted by Age UK through direct calls to potential participants. Participants (S1 n=14, S6 n=12)<sup>1</sup> were drawn from across the local area and included members of the Age UK exercise class and two Age UK staff, and participant ages ranged from approximately 45 to 95 years of age. Whereas, in the Cornwall sessions recruitment was conducted by an academic researcher and advertised on-site using posters and word-of-mouth. Participants (S2 n=6, S3 n=4, S4 n=3 & S5 n=4) were drawn from across the sheltered accommodation, and participant's ages ranged from 32 to 92 years of age.

### **3.4.4 What If? Workshops Breakdown**

Secondly, the What If? project featured five workshops; one in London and the others in Lancashire, of those one was organised in Lancaster and three in Blackburn. These workshops took place between July and December 2016. Of the five workshops, two did not run and one was partially completed. In July 2016, recruitment for the first of the What If? workshops (WI1) in Lancaster, UK, failed to attract an audience (S7 n=1, S8 n=0). However, later that month, the second workshop (WI2) was run in London, UK. The venue was Age UK, National Office and the session (S9) ran from 10:00 to 13:00. Recruitment was conducted by Age UK and focused on recruiting participants with an interest in policy. Participants (n=5) drawn from Age UK staff, were invited to review materials in advance

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<sup>1</sup>S followed by an ordinal number denotes individual sessions.

of the workshop. Participant ages ranged from approximately 25 to 65 years old. The third workshop (WI3) was held in Blackburn, Lancashire, UK, in late July 2016. The venue was a day care centre in Blackburn, Lancashire and the session (S10) ran from 12:30 to 15:30. Recruitment was conducted by Age UK Blackburn through direct contact and calls to potential participants. Participants (n=9) were drawn from across the local area and included people with pre-existing contact with Age UK services and one Age UK worker with participant ages ranging from approximately 60 to 90 years old. The fourth workshop (WI4) was to be held in Blackburn, Lancashire, UK, at the beginning of September 2016 at a local community centre with, One Voice, a BAME community organisation. However, the recruitment process conducted by the organisation attracted a small number of participants (n=3) and the workshop did not run. The fifth and final workshop (WI5) was held at the same location in mid-December 2016 and the session (S12) ran from 12:30 to 15:30. Recruitment was again undertaken through word-of-mouth contacts and email mailshots with participants (n=4) drawn from across the local area with pre-existing contacts with the organisation's services and included one worker. Participant ages ranged from approximately 60 to 75 years old.

### **3.4.5 Workshops Summary**

To summarise, across the ProtoPolicy and What If? projects, eight distinct workshops were run. Within these workshops there were twelve individual sessions and, of those sessions, nine were completed as intended, with two sessions not running and one being discontinued. The participant group was predominantly, though not exclusively, older people, with the main exception being Age UK staff. The workshops took place in the UK, in London, Lancashire and Cornwall.

### **3.4.6 Activity Timeline**

The ProtoPolicy programme of workshops took place in Halton, Lancashire and Redruth, Cornwall between June and September 2015, with an additional event taking place in early July. While, the What If? programme of workshops took place in Lancaster, Lancashire and Blackburn, Lancashire between April and December 2016. The activity timeline below details the numbers of participants, date, time, location and the degree of completion of each workshop. Within the programme of work each individual session and workshop has been allocated a code; where 'P' indicates that ProtoPolicy is the workshop programme with the following ordinal number indicating the workshop itself, and 'S' followed by its ordinal



number denotes the individual sessions within the workshop. In the same manner, 'WI' indicates the What If? workshop programme and the following ordinal number indicates the workshop itself, and 'S' followed by its ordinal number denotes the individual sessions within the workshop. The numbering of the What If? sessions follow directly on from the ProtoPolicy sessions.

Table 3.1 Activity timeline for the ProtoPolicy and What If? projects

Location	Time & Date	Workshop/Session	Participant	Completed
Halton, NW UK	13:00, 16 <sup>th</sup> Jun. 2015	P1/S1	(n=14)	Yes
Redruth, SW UK	10:00, 22 <sup>nd</sup> Jun. 2015	P2/S2	(n=6)	Yes
Redruth, SW UK	13:30, 22 <sup>nd</sup> Jun. 2015	P2/S3	(n=4)	Yes
Redruth, SW UK	10:00, 22 <sup>nd</sup> Jun. 2015	P2/S4	(n=3)	Yes
Redruth, SW UK	13:30, 22 <sup>nd</sup> Jun. 2015	P2/S5	(n=4)	Yes
Westminster, London	12:30, 6 <sup>th</sup> Jul. 2015	ADPIG Event	–	–
Halton, NW UK	12:30, 2 <sup>nd</sup> Sep. 2015	P3/S6	(n=12)	Yes
Lancaster, NW UK	10:00, 21 <sup>st</sup> Apr. 2016	WI1/S7	(n=1)	No
Lancaster, NW UK.	13:00, 21 <sup>st</sup> Apr. 2016	WI1/S8	(n=0)	No
London, UK.	10:00, 12 <sup>th</sup> Jul. 2016	WI2/S9	(n=5)	Yes
Blackburn, NW UK.	12:30, 26 <sup>th</sup> Jul. 2016	WI3/S10	(n=9)	Yes
Blackburn, NW UK.	12:30, 1 <sup>st</sup> Sep. 2016	WI4/S11	(n=3)	No
Blackburn, NW UK.	12:30, 15 <sup>th</sup> Dec. 2016	WI5/S12	(n=4)	Partially

Where P = ProtoPolicy, WI = What If? and S = Session

### 3.4.7 Demographic Breakdown

No demographic data was formally collected as part of either project; however, a rough characterization may prove useful to the reader. So, informally from personal observation and conversation with participants in the workshop, I was aware that the majority of participants were white British, with the exception of three participants in workshop (WI3) and the four participants of workshop (WI5) who were all of Asian heritage. With regard to work, participants may be split into two groups; those employed with professional experience of the issues facing older people or BAME communities, and those who are not employed, being either retired or never having worked. Within those who were employed, the ages ranged from 25 and 65 years. Within those who were not employed the youngest participant was 32, however this was very much an outlier, and most people were between 60 and 95 years old.

### 3.5 Limitations

Godin and Zahedi notes three issues that should be of concern to Research through Design projects in terms of their limitations: shorter timeframes leading to ‘less leveragability in results’, embodiment in the artefact leading to knowledge being trapped, and the inherent difficulties for the researcher in accessing tacit knowledge (2014). While the initial work on the research study was over a relatively short time frame reflection in action and subsequent reflection on action has taken place over an extended period. This has allowed for insights, observations and understandings to reveal themselves to the researcher over time.

### 3.6 Ethics

Two external projects, *ProtoPolicy* and *What If?*, provided the basis for the fieldwork for my research study. *ProtoPolicy* was supported by the Arts and Humanities Research Council (Grant no: AH/N003810/1). *What If?* was funded through Lancaster University’s Impact and Knowledge Exchange Grants. Both of these external projects had ethics approvals from Lancaster University. Within my research study I pursued no additional research action that might necessitate a further ethics approval.

Making use of external projects to provide the context for my research study raises an ethical concern regarding the potential for self-plagiarism. However, there is a clear separation between the focus of the external project’s research questions and my own that should in itself provide some assurance in this regard. Additionally, I have listed the publications related to all of my research into this topic area in order to provide further reassurance.

### 3.7 Summary

In this chapter I laid out the rationale for the selection of my methodological approach and research methods and I introduced the context of my research study. With this groundwork prepared I now move on to present the research findings in the next two chapters.

# Chapter 4

## Design as enquiry

I began to develop my understanding of design fiction by examining the available academic and the grey literature, and by creating potential visual communications and design tools to support the facilitation of subsequent workshops, most particularly those in the What If? project. These two ways of working developed hand in hand and the development of the visual communication artefacts captured something of my engagement with the various theoretical concepts that I was exploring as I sought to understand the various dimensions of design fiction work.

As discussed in the methodology, see page 52, I approached this work as a bricoleur. The interconnecting set of visual communication artefacts developed through the research study represent an ‘emergent construction’ (Gray and Malins, 2016) that points the viewer towards ways to grapple with the theory surrounding design fiction. This bricolage is ‘a pieced-together set of representations [] fitted to the specifics of a complex situation’ (Denzin and Lincoln, 2011). In this chapter I discuss the bricolage, its material, theory, and its form, which borrows from archaic navigational aids. Each visual communication artefact is introduced with an image. Brief descriptions and explanations are offered and at times I take extended detours to explore some of the thinking that developed through these making processes.

A research study timeline, see 4.1, is included as a visual aid to readers to show how the external projects and the various making activities fed into each other and the eventual development of my contributions to knowledge, namely a theoretical framework, see 6.5.1, and a scaffold for facilitators, see 6.5.2. Specific timings for workshops may be found in table 3.1. The research study timeline references a number of visual communication artefacts on occasion using shortenings, their full titles are noted in the following paragraph.

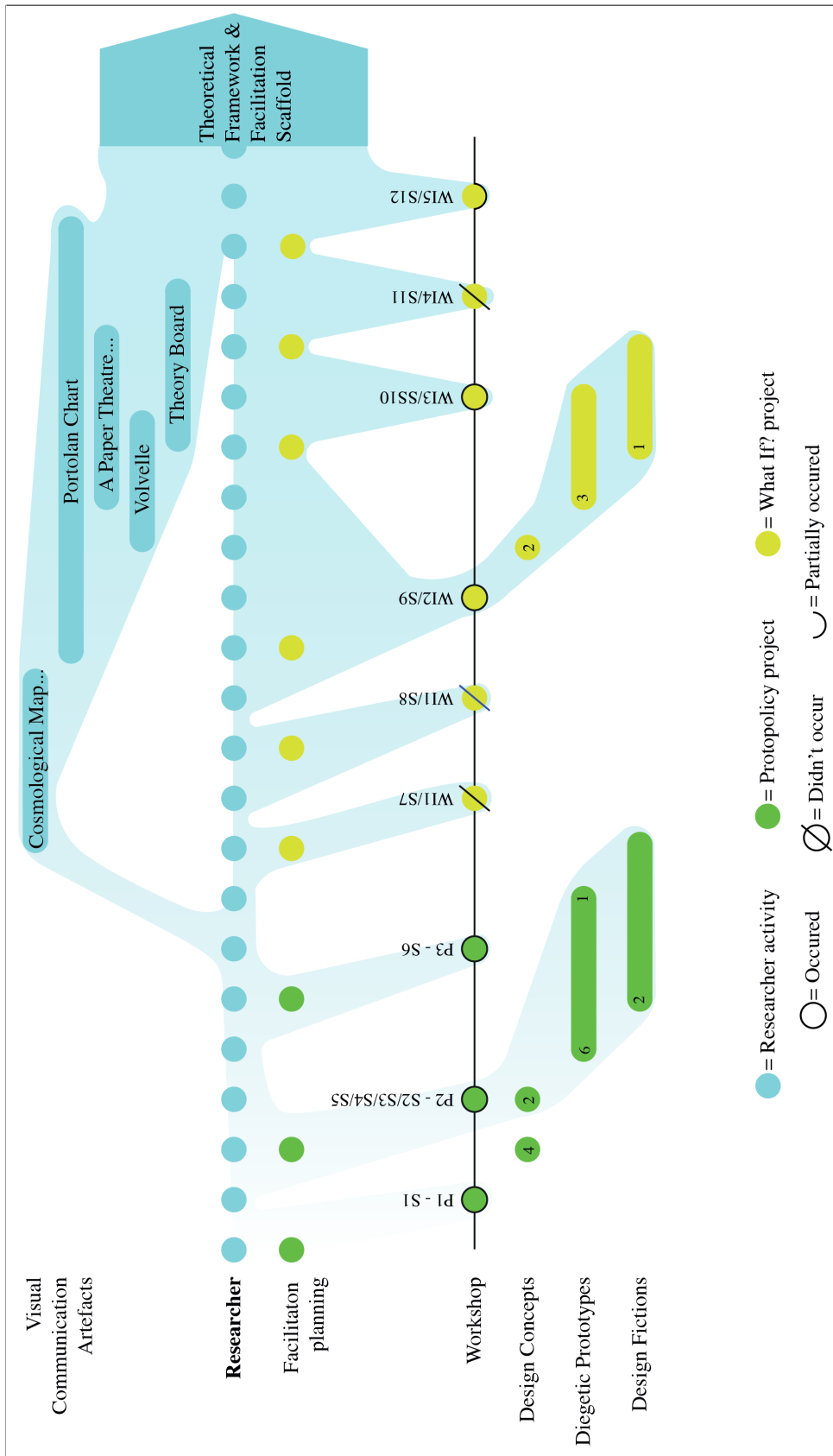


Figure 4.1 Research study timeline

The primary artefact is titled, *A Portolan Chart of utility to the creators of Participatory Possibilia in navigating the seas of Possibility as they seek to lay eyes upon the edges of Near Future Possible World* (see figure 4.2) which from this point on will be referred to simply as the, or a, 'Portolan Chart'. A number of other artefacts were designed, or collected, to sit with the chart, these included; a *Volvelle* (see figure 4.6), and *A Paper Theatre of Design Fiction* (see figure 4.7). A series of placeholder objects marked, as follows; *Ethics* (see figure 4.9), *Trends* (see figure 4.9), *Speculations* (see figure 4.9) and *Co-created Speculations* (see figure 4.9). Various other elements include a small crystal ball, a traditional magnetic compass with a poem engraved into its lid, and a brass sand timer (see figure 4.8). Sitting to one side of the Portolan Chart is a *Theory Board* (see figure 4.5). This object is designed to accept a *Tablet* and the previously mentioned *Volvelle* (see figure 4.6).

The process of creating A Portolan Chart was begun between the external projects, and was iterated on over a period of around year and extended with a number of other artefacts. I have treated it as a tool to think with and to change as I saw fit as I have developed my understanding. The chapter is split into three parts, A Portolan chart 4.1, A Miscellany 4.2, and Omissions 4.3.

## 4.1 A Portolan Chart

Taking up Slaughter's 'map of the future' (Slaughter, 1996) metaphor, the *Portolan Chart* is a somewhat fantastical navigational aid, that contrarily for a future-focused endeavour looks to the past for its aesthetic and inspiration. It is designed as a way for the author to overlay a number of understandings of the future in order to outline a worldview in support of the use of participatory design fiction interventions into futures debates. The science fiction author Arthur C. Clarke extends the map metaphor, saying:

If we regard the ages which stretch ahead of us as an unmapped and unexplored country, what I am attempting to do is to survey its frontiers and to get some idea of its extent. The detailed geography of its interior must remain unknown – until we reach it (Clarke, 2013).

It was this understanding of the future as an undiscovered country, my various attempts at visualisation and a conversation with my partner about medieval maps, that brought me to consider the Portolan chart as a more specific metaphorical extension better suited to my purposes. Figure 4.3 presents *The Carte Pisane* the earliest example of a Portolan chart,



Figure 4.2 A Portolan Chart of utility to the creators of Participatory Possibilia in navigating the seas of Possibility as they seek to lay eyes upon the edges of Near Future Possible Worlds

made and used by sailors (Unknown, 1300). Tony Campbell, former Map Librarian of the British Library (1987-2001) suggests

that we need to distinguish three quite separate uses of a Portolan chart at sea: first, for assisting navigation when out of sight of land; second, to confirm the ship's position along a coastline, with reference to observed headlands or islands; and, third, when picking a way through an archipelago (Campbell, 2011).

This triad of utilities might be summarised as setting direction, confirming location and avoiding potential danger. As such Portolan charts were used at sea. They are not large-scale *mappaemundi* designed for contemplation on land. They are made for navigation; to be used, to get soaked with salt water, to get dirty and to be added to. They represent accumulations of knowledge gained by experience and best guesses, aimed at bringing one safely to an intended shore. These are to some degree also the concerns of this research enquiry.

Below I introduce different elements of the Portolan chart, including; The Cartouche (section 4.1.2), Heraldic Achievement (section 4.1.3), The Seven Ages of Man (section 4.1.4), Innocence and Experience (section 4.1.5), The Longue Durée (section 4.1.6), The Futures Cones (section 4.1.7), The Wind Gods (section 4.1.8), Ethics and Possible Worlds (section 4.1.9), Utopias (section 4.1.10), Heterotopia (section 4.1.11) and Discursive Space (section 4.1.12).



Figure 4.3 The *Carte Pisane* an early example of a Portolan Chart (Unknown, 1300)

Before I begin with The Cartouche I will make a brief diversion to mention the origins of the methodological approach and the Portolan chart's beginnings.

#### 4.1.1 Origins

In early 2016 I began to make a visualisation, *A Cosmological Map of Possibility for the Illumination and Benefit of Design Fictioneers* (see figure B.37). It was a start point for a series of tools used in the What If? workshops, see figures B.31, B.32 and B.33, it was a placeholder to remind me to introduce some ideas to participants. Some of the elements that would eventually appear in the Portolan chart were first explored in this earlier iteration of explorative mapping, *A Cosmological Map of Possibility*. The poster introduces some of the ideas that I began to explore as I began to understand the design fiction method and how a participatory design fiction approach might function. It made no claim to completeness. My choices within it related a partial understanding, my preoccupations and comparisons betrayed my literary interests and experience as I tried to make sense of design as a fictive, rather than prospective, practice. I drew on any material, concept or practice that I was already familiar with and that presented itself as having a potential relevance to the topic. As I followed this path I became aware that I had adopted the role of a 'bricoleur' (Levi-Strauss, 1972, p. 11) and was actively practicing 'design as bricolage' (Louridas, 1999b). I embraced the approach. Drawing on familiar literary texts, including; *Utopia* (More, 2011), *The Odyssey* (Homer, 2000), and *Songs of Innocence and Experience* (Blake, 1991) to develop my exploration and I touched on my own artistic practice in poetry. As my previous design experience came mainly from designing and facilitating codesign activities rather than objects, I made the practice of physical making and graphic design core parts of the reflective process in order to develop my understanding both of, and through, design.

### 4.1.2 The Cartouche

A cartouche is an ornate or ornamental frame that is often used to highlight particular pieces of text on a map. As pictured in figures B.37 and 4.2 the cartouche is an image of Aeolus, the Greek god of wind. He is captured exhaling, with winds and clouds billowing outwards, to surround some text. I will return to Aeolus in section 4.1.8, for now I will focus on the text.

The full title and text in the cartouche read as follows,

A Portolan Chart of utility to the creators of Participatory Possibilia in navigating the seas of Possibility as they seek to lay eyes upon the edges of Near Future Possible Worlds presented by Mr Darby of The University of Lancaster

and wrapped either side of the cartouche the date ‘8<sup>th</sup> November 2016’ is given.

The text points to several key ideas. Like the original Portolan charts, this one was conceived as an aid to navigation. It is intended to be useful at a practical level. Though that idea is somewhat hidden by the heightened language. I chose ‘the seas of Possibility’ as a phrase because possibility is incredibly expansive and by its nature uncertain, and I wanted to highlight uncertainty and the scale, and the breadth of positive and negative outcomes it holds. I highlighted the making of possible objects, drawing on a term used in philosophies of possibility, ‘Possibilia’, and also prefaced it with ‘Participatory’ to indicate it as a key approach to their creation. I shunted two concepts together in the phrase, ‘Near Future Possible Worlds’, highlighting my intention to engage with both possible world theory and design futures. I should also note the use of the term ‘lay eyes upon the edges’ which points to the partiality of any ambition related to the knowing of future realms. Finally, the text gives my name and affiliation, in recognition that my role as a researcher would be front and centre in the research process.

In a later section, see 4.2.1, philosophical constructs of possibility and possibilia are addressed using the *Theory board*. For the moment it is enough to foreshadow later developments by noting that I have taken heed of Yagisawa’s warning that ‘the idea that fictional objects are possible objects should not be accepted blindly’ (Yagisawa, 2022).

### 4.1.3 Heraldic Achievement

The heraldic achievement to the upper left of the Portolan chart is intended as a shorthand to highlight the longstanding interlinked nature of three influences, government, industry



and academia. This triumvirate are the source of many of the drivers that shape our futures, namely; knowledge, money and political, regulatory and legislative power.

The Crown, a traditional symbol of monarchy, is used to represent the sovereign state, its government and judiciary. Above, the sinister (to the left) supporter sits 'Academia' and over the dexter (to the right) supporter 'Industry'. Dunne and Raby, p. 4 argue that government and industry determine what makes a preferable future, with consumers taking a lesser role (Dunne and Raby, 2013, p. 4). I add academia, as it is increasingly leveraged by government to generate impact through knowledge exchange with industry.

Below these elements presented on an unfurled banner the motto below reads, 'With Great Expectation of Technological Progress'. The motto presents the shared aim of each of these sources of influence and makes clear both their pro-innovation bias and their role in the programme of Western modernity, see section 2.2.3.

#### 4.1.4 The Seven Ages of Man

*The Seven Ages of Man* is a series of paintings by Robert Smirke, derived from a monologue from William Shakespeare's play *As You Like It*, where it was spoken by the character Jaques in Act II Scene VII. In the speech Shakespeare lays out seven ages of man beginning with 'The Infant', and following on with 'The Whining School-child', 'The Lover', 'The Soldier', 'The Justice', 'The Lean & Slipper'd Pantaloon', and finally ending with 'Second Childishness & Mere Oblivion'. With the ProtoPolicy and What if? projects focus on older people Smirke's final image of elderly male decrepitude came to mind as a cliched depiction of ageing.

The projects also highlighted a presumed linkage between youth and technology, the idea that

anything that gets invented after you're thirty is against the natural order of things and the beginning of the end of civilisation as we know it until it's been around for about ten years when it gradually turns out to be alright really (Adams, 1999).

This sentiment was expressed by fellow researchers in my department who assumed older people could not be innovative and older people in the workshops who assumed technology was only for younger people.

On the Portolan chart *The Seven Ages of Man* list is presented with the wordings, as above, written in shaded boxes layered over a single dark ribbon. For me, the list is both a shorthand to highlight the different expectations of each age, and a note on the patriarchal normative that Shakespeare's stereotypes present and that are all too alive and well in many discourses to this day. The speech uses an extended metaphor to claim that the world is a stage and all men and women are players in a fiction on that stage. Shakespeare then sets aside women, and highlights a short period of acuity and strength in men that is bookended by childishness and irrelevance.

Martins addresses a need for greater attention to intersectionality within the speculative and critical design fields and 'proposes the idea of a "feminist speculative design" as a strategic approach to addressing issues of systemic gender violence and discrimination' (Martins, 2014). While I have not explicitly pursued a feminist speculative design approach within this study I am supportive of the approach. I was pleased to discover Martins criticism, as I had noted similar concerns while encountering the literature, that a

patronising, classist and self-centered attitude within SCD may be explained by its history as a discipline theorised within the safe confines of developed, european countries and practiced largely by a privileged and mostly white, male, middle class crowd (Martins, 2014).

#### **4.1.5 Innocence and Experience**

At either side of the central spiral, 'Experience' and 'Innocence', are placed hanging in open space. They are included to remind the viewer that they are innocent of the future, though they may also be, to varying degrees, implicated in its formation. They also connote William Blake's *Songs of Innocence and Experience*. They call to mind, for me at least, the introduction from Songs of Experience, and the opening lines, 'Hear the voice of the Bard! / Who Present, Past & Future, sees;' (Blake, 1991). In these lines, Blake reveals two significant commonly held viewpoints on status and insight in creative practice, as well as establishing 'at once the principle that the imagination unifies time by making the present moment real' (Frye, 1957).

Regarding status Blake sets out a demand to be heard proclaiming his expertise as a 'Bard' as reason enough. He then supports his argument by inferring that this bardic capability gives time-defying insight into the world that seemingly point towards a kind of eternal truth. While Blake's proclamation of a special designation for creative authorship exposes a view of creativity as the preserve of those with particular skill, it is the sense that this designation

actively diminishes the insight of those without such skill that strikes a discordant tone. It is, perhaps, the result of our desire to understand artistic genius that creates a tendency towards the reification of both the person and their views, thereby placing them above others. It is, to some small extent, this habit of thought that this work seeks to resist. Lacking a surfeit of talent does not render one without view or voice; it does, however, make it more difficult to see and to be heard.

Somewhat cynically, or perhaps simply distrustfully, I compare the title ‘Speculative Designer’ to Blake’s ‘Bard’, recognizing that there is a particular capital to be gained by the capitalization. It tells the world that they hold experience, that they are special, and that they are the ones who can navigate the future. A participatory approach to design fiction seeks to engage with many bardic voices to reach a plurality of insights.

#### 4.1.6 The Longue Durée

My original sketches for ‘A Cosmological Map of Possibility’ made use of a circle to shape a *world*, I even placed an image of the world inside the circle to drive the point home. The *world* was surrounded by a series of textual phrases that explore the future, present and past and how they are aspired to, fixed and forgotten. However, this circular *world* concept didn’t quite work as it attempted to connect the endpoints of the chronology, the ‘The Unimagined Depths’ and ‘The Isles of the Future’. Thinking about this problem, on a beach walk with my partner I came across some small periwinkle shells. I noted the shape, how the spiral inward to its centre made the start point invisible to me, the slightness of the open edge, and how the outer edge was not the end of its story as more had yet to form. The spiral of this sea snail’s shell at once presented to me an image an unknowable past, a lived precarious present and an unformed future. The poetic phrases within the text draw on the ‘map of the future’ metaphor and simultaneously call to, if not exactly draws on, an idea from the discipline of history, the *longue durée* (Armitage, 2012). That is the consideration of long-term historical structures. The text attempts to capture how from our current understandings long-range past and future possibilities form. With this in mind, *The Vicissitudes of Life*, and the ribbon of *The Seven Ages of Man* is sited close to ‘The Land of Now’.

However, holding the Portolan chart, time appears as a *longue durée*. It spirals out from an unknowable past unfolding, with a poetic turn of phrase, from ‘The Unimagined Depths’ to ‘The Land of Now’, it is then extended into the future by calling on Henchey’s alternate classes of the future (1978) to frame the expansion, as follows; ‘The Unimagined Depths’, ‘The Ocean of Conjecture’, ‘The Archipelagos of Legend’, ‘The Sea of Forgetting’, ‘The

Bay of Foregoing’, ‘The Channel of Values’, ‘The Sea of History’, ‘The Strand of Record’, ‘The Land of Now’, ‘The Promontory of Prediction’, ‘The Expanses of Extrapolation’, ‘The Straits of Probability’, ‘The Gulf of Plausibility’, ‘The Seas of Possibility’ and ‘The Isles of the Future’. Temporal concerns are introduced at their largest scale in order to note that our transitory lives fix our perspective in an ever-expanding time, as there will always be more past and infinite futures from our current vantage point.

#### 4.1.7 The Futures Cones

Intersecting the spiralling expansive temporality of the *longue durée* and diverging out from just below *The Rivers of Speculation* and the *Technology Stream*, see section 4.1.8, are the futures cones (Candy, 2010; Dunne and Raby, 2013; Hancock and Bezold, 1994; Henchey, 1978; Taylor, 1990; Voros, 2001). These divergent lines marked, possibility, plausibility and probability, open out from left to right across the width of the map. The expected fourth term, ‘preferability’, is purposefully omitted as it is itself under question as part of the process.

The futures cones visualisation approaches temporality through potentiality. It equates more distant futures with greater breadths of possibility. It also imagine scenarios, see figure 2.2, as potential events that form more immediate and tangible futures than those considered within a *longue durée* approach. Dunne and Raby recognised the value of using the futures cones to classify speculative design outputs in reference to probability, through this consideration they implicitly made speculative design outputs synonymous with scenarios, though speculative artefacts and scenarios have seemingly different intents. As these speculative artefacts and scenarios are constructed by the world setting out contexts for novel technological development and technological developments forming new worlds a relatively short temporal range is naturally established.

Attempting participatory design fiction work with older people reveals another temporal concern – the participants’ mortality. Several of the older people I worked with felt that they were unqualified to speak about the future. They felt that technology had overtaken them and they could not, and did not want to, catch up again. They felt their age and mortality keenly and wanted to leave talk of the future to younger people who would be there to live through more of it. These views were not unanimous, however, as others were keen to speak and be heard particularly on the subjects of the treatment of older people and the UK’s ageing society. However, they were also acutely aware of the shortness of the time, energy and opportunity available to them. The use of part of a dead animal, a cow skin split, as the substrate for the map was made in part to reflect the long tradition of text and diagrams being

presented on animal skins as a way of preserving knowledge, often in difficult conditions. The *Carte Pisane*, see 4.3, is just one example of this common practice. Its use also carried the connotation of mortality which linked back to the participant concerns. Unfortunately, at the time I gave no thought to an open workshop setting which might include ethical vegans. When this thought occurred I realised that I would probably not use the leather map in an open setting for this reason. However, Japanese paper could be considered as an alternative material, as it possesses durable qualities and also has a long history of use in maps.

While handling the map, occasionally screwing up the leather, and throwing it the floor, sometimes I would see only small areas of the futures cones with other parts hidden in the dark folds. This partial view of the cones became intriguing in developing my visualisation into an artefact I sought to place in the hands of the viewer, so that they could almost become a part of the map. When I developed the understandings articulated in the literature review, section 2.3.2, I had begun to consider where the participants of design fiction workshops might be positioned in relation to the Dunne and Raby version of the futures cones. And in imagining the Portolan chart in the hands of the viewer I had arrived at a similar position to the Coulton and Lindley diagram, see 2.6, (2017). However, where Coulton and Lindley had included the past in the diagram, I contend that the past is held within the viewer of the map. In this way the past and present are bound by the viewer and their relation with the future, their mortality, and their partiality. Indeed it is the partiality of the participants' speculative construction that makes it potentially significant. I will return to this theme in section 4.1.11.

### 4.1.8 The Wind Gods

As mentioned previously, in section 4.1.2, I drew on the figure of Aeolus, the god of wind, from Homer's *Odyssey* for the Portolan chart's imagery. Aeolus is featured prominently as a visual element in the cartouche, and also to mark three other elements of the Portolan chart; 'The Rivers of Speculation' which incorporates 'The Technology Stream', 'The Vicissitudes of Life' and 'The Laws of Nature'. Through the image of the wind god releasing the winds onto the world I sought to indicate something of the unpredictability at play within design fiction.

Design fictions are underpinned by current scientific understandings or theoretical possibility, as such they operate within 'The Laws of Nature' as experienced on the planet Earth. A future world created in a design fiction does not present a *fantastical* move, it operates within a familiar *mundane* framing where physical laws continue to underpin a physical existence.

‘The Rivers of Speculation’ and ‘The Technology Stream’ are identified in recognition that design fiction operates within a much wider tradition of speculative practices and that technological speculation is a significant and necessary part of design fiction. Design fictions explore the intersections of political, environmental, legal, economic and social change which is represented by ‘The Rivers of Speculation’ and technological change represented by ‘The Technology Stream’. These changes are built into the fabric of ideologies, governments, institutions, laws, as well as into commercial practices and artefacts. All of these forms of change are constantly contested and their interplay shapes the world in unexpected fashions. I expand on the theoretical implications of adopting this perspective on technology in section 4.3.1.

‘The Vicissitudes of Life’ is a phrase that seeks to recognise my own interest in a design fiction that resists the futures of predominantly wealthy able-bodied western societies pictured in corporate design fiction works such as (Corning Incorporated, 2011). And instead points to an engagement with a plurality of experiences inclusive of marginalised perspectives. Finally, ‘The Vicissitudes of Life’ as a phrase foregrounds the potential for negative consequence associated with change. It centres the human experience as being subject to ‘The Laws of Nature’ and all of the various changes and contestations presented by ‘The Rivers of Speculation’. I hope it also acknowledges that individuals and groups of human beings experience being buffeted by the eddies and flows of change events, particularly those within ‘The Technology Stream’, differently.

#### **4.1.9 Ethics and Possible Worlds**

The divergent lines of the futures cones pass through a ‘line of ethical consideration’ on which are placed ten circles each enclosing the word *Ethics*. These circles begin by the *longue durée*’s ‘The Channel of Values’ and end by ‘The Expanses of Extrapolation’ and are intended to represent a range of possible ethical positions that might inform possible worlds. I did not intend to use *Ethics* as an academic term, or necessarily to engage a particular reading of ethics. I wanted to reference moral philosophy in its broadest sense and in a way that was accessible in ordinary language and connect it at root to expressions of values. In a participatory context any articulation of moral philosophy is likely to be made in ordinary language and through messy expressions of motivating values as opposed to specific ethical arguments. This could be seen throughout all of the workshop discussions.

The terms ‘world as [it] is’, ‘near futures’ and ‘speculative futures’ (Sanders and Stappers, 2014b) are positioned alongside the curve of ‘Possible Worlds’ that are represented by circles,

which increase slightly in size from left to right. I adopted the terms ‘world as [it] is’, ‘near futures’ and ‘speculative futures’ as they offered a usefully simple taxonomy to explain the shift from what is, to what could be and on to what might be in relation to futures. This was despite a questionable analysis of the place of design fiction in design research which located its temporal interest as being on speculative futures rather than the more generally accepted near futures, see figure 2.7. The ‘Possible Worlds’ with the smallest area located near the phrase, *world as is*, and are intended to indicate a minimal shift from the actual world. They are positioned close to *The Straits of Probability* to signal how such futures are based on knowledge of the actual world to make minimal predictions of the likely. The ‘Possible Worlds’ with larger areas indicate a lesser degree of likelihood.

Two of the ‘Possible World’ circles in the sweeping curve are highlighted by shaded circles that form a crescent shape beneath them. These sit next to the legend ‘near futures’. One is connected by long dotted line that runs through the centre of the ‘Probable’ futures cone segment, through a placement point for a *Design Fiction Volvelle*, back to the circle marked ‘A Design Object’ and ‘A Design Space’. On the one hand this may represent the strong link between that which is planned and probable outcomes, and on the other hand it may represent the practice of an affirmative mode of design fiction and the normative state of affairs. It is the future that is most thought about. The other shaded ‘Possible World’ is connected by short dotted line that runs through the centre of the ‘Plausible’ futures cone segment to a second placement point for the *Design Fiction Volvelle* that sits at the centre of an heterotopic space, see 4.1.11. This ‘Possible World’ is also linked by a dotted line to the Discursive Space, see 4.1.12. This represents the practice of participatory forms of design fiction, which might be either critical or affirmative, that highlights the development of non-normative states of affairs.

Here, the term ‘Possible Worlds’ is used in ordinary language terms as per the futures cones (Hancock and Bezold, 1994; Henchey, 1978; Voros, 2001), though “‘possible world’” has been part of the philosophical lexicon at least since Leibniz’ (Menzel, 2021). Having noted Possible World Theory in the literature review, see 2.4.7, I address something of the subtleties that should be paid attention to within design fiction practice in section 4.2.1.

#### 4.1.10 Utopias

In the Portolan chart, towards the end of the curve of circles marked *Possible Worlds* are two with the terms Dystopia and Utopia alongside them, these are followed by two further remote worlds located beyond ‘The Laws of Nature’. These are different forms of ‘speculative

futures’, and in presenting *Possible Worlds, Dystopia and Utopia* in this way it is my intention to highlight the need to engage with these terms and related concepts. I found the concept of utopia important to consider when thinking about design fiction because it is a fictive practice that allows for the exploration of a wide range of possible social realities. It places non-existent, yet still possible, societies in contrast to our own and in so doing permissions reflection on the current state of our lived reality. It is also a mature practice that has been subjected to much academic consideration.

While Thomas More a prominent English Christian coined the term Utopia in his book of 1516 the idea of utopianism was prevalent prior to that time and was not confined to the Christian West, there were also pre-contact Chinese and Arabic examples of the tradition. Sargent offers a useful, and wide, definition;

I define the broad, general phenomenon of utopianism as social dreaming—the dreams and nightmares that concern the ways in which groups of people arrange their lives and which usually envision a radically different society than the one in which the dreamers live. But not all are radical, for some people at any time dream of something basically familiar (Sargent, 1994, p. 3).

Sargent provides a number of useful insights related to utopia. Making use of these I highlight some of the features of utopia in order to consider some of the differences between design fiction and utopia. The first issue is one of scope and scale of a utopia, it requires the author to create an entire ‘non-existent society described in considerable detail’ (Sargent, 1994). Secondly, dystopia and eutopia are exaggerations that take extreme positions relative to the society of a contemporaneous reader, as they are either intended to be viewed by them as ‘considerably worse’ or ‘considerably better’. By contrast the subject of a design fiction is not of a large scale. Its scope extends ostensibly as far as the reach of the product or service at its heart. Additionally, though it may be read contemporaneously as either a dystopic or eutopic endeavour its intent is generally less didactic and more ambiguous. That ambiguity is intended to be a state that invites a critical interrogation by the viewer.

Utopian satire, anti-utopia and critical utopia are all types of utopia that promote criticism in different ways and require varying degrees of maturity within the genre to come in to being. Utopian satire offers ‘a criticism of [that] contemporary society’, while anti-utopias offer ‘a criticism of utopianism or of some particular eutopia’, and critical utopia have ‘difficult problems that the described society may or may not be able to solve and which take[s] a critical view of the utopian genre’ (Sargent, 1994). While utopian satire engages an audience through humour to make its critical points about contemporary society, anti-



utopia and critical-utopia are more reflexive as they consider and critique both contemporary society and an individual utopia, utopianism or the genre itself. Parallels with design fictions may be drawn as they often operate with this kind of reflexivity as they knowingly call on the tropes of the corporate visioning exercises that Coulton and Lindley variously termed ‘vapour fictions’ or ‘vapourworlds’ (Coulton and Lindley, 2017) to envision their critical or affirmative futures.

The strategy of shifting time is key to design fictions and some utopia too. Uchronia are utopia that highlight shifts in time over shifts in space. In utopia, these shifts may be both backward and forward. As De Sá argues,

Utopia emerges through the allusion to a space without a place, a space that is nonetheless possible and whose existence does not essentially contradict nature, and it does so by placing this space in the future. If the reference to space gives utopian thinking its essential link to reality, the dimension of time lends utopia its central meaning: the possible transformation of the future of humanity. In this way, far from being the description of a fantasy or the formulation of mere wishful thinking, utopia is defined by a decisive connection to effective reality: not to reality as a given fact, but to a reality to be constructed and reinforced factually on the basis of an anticipated future opened up by utopian thought itself (De Sá, 2010, p. 26).

The central meaning of design fictions tend to be less ambitious than those ascribed to utopia above, that is ‘the possible transformation of the future of humanity’. The transformation considered in design fiction is smaller, wrapped tightly around diegetic prototypes as it is, it is focused on the transformation of the future of some humans not necessarily humanity as a whole. Design fiction’s ‘decisive connection to effective reality’ is therefore often, though not always, stronger than that of utopias.

#### **4.1.11 Heterotopia**

Set inside ‘The Longue Durée’, are the sweeping curves of possible worlds and the line of ethical consideration. Inside these a thick line draws a large circle at the centre of the Portolan chart, while another thick line draws a misshapen oval inside of it. The circle represents the actual world, while the misshapen oval represents heterotopia (Foucault, 1984) within it. As noted in section 2.4.7, the concept of heterotopia has been considered a potentially beneficial augmentation to Inayatullah’s foundational work (2008) on futures thinking (Bussey, 2009).

However, for me relating the concept of heterotopia to design fiction was initially an intuitive leap rather than as a result of an engagement with the literature. It was made after my colleague Ding Wang, who was exploring using a Foucauldian approach to explore Smart Cities, introduced me to the concept in conversation.

Heterotopia is a difficult concept to pin down, however its flexibility is a strength. Many different kinds of spaces and things can be analysed or read as heterotopias, Foucault's own heterotopology offers examples, including; theatres, cemeteries, prisons, hospitals, rugs and mirrors, among other places and artefacts. The virtual realm can also produce heterotopia, with Facebook being cited as one example (Rymarczuk and Derksen, 2014). The diagram at the centre of the Portolan chart maps the relationships between the six principles of heterotopia, as described by Foucault (1984), and considers both normative spaces and heterotopic spaces as potential sites of encounter between a user and a technology that may form possible futures.

Two potential positions are marked out with a thin circular line to indicate that the *Design Fiction Volvelle*, see 4.2.3, sitting in its stand alongside the *Paper Theatre of Design Fiction*, see 4.2.4, might be set down in either place.

Noting that participatory approaches to design exist because of the acknowledged marginalizations that occur in the development of normative mainstream practices, and that acts of othering are central to the formation of heterotopia I felt the concept could offer a useful way forward to address participatory approaches to design fiction. As sites of encounter heterotopia are 'embedded in aspects and stages of our lives [] which somehow mirror and at the same time distort, unsettle or invert other spaces' (2013). Also, Topinka argues that 'as heterotopias clash with dominant orders, they simultaneously produce new ways of knowing' (Topinka, 2010). As utopian visions, built on dominant orders and financed by the hegemony, are often first to colonise the future, perhaps there is a role for heterotopian visions to 'clash' with them and generate new understandings.

So, one position is set within the large circle, representing the normative actual world, and one within the oval, denoting a marginalized heterotopia. At the centre of these marked positions are question marks referencing the 'What If?' query central to speculative creative strategies. The question marks are surrounded by a small circle with the terms 'Participatory Possibilia' and 'Design Fictions' wrapped around it. These terms point towards the different views of fictional objects and possible objects which is explored in a later section, see 4.2.1. Returning to the two potential positions, one placement is set within the 'Probable' segment of the futures cones and indicates design actions made from an affirmative position. The other to its right is set in the 'Plausible' segment of the futures cones and indicates design

actions made from critical positions. Each lead to a different possible futures with varying degrees of probability and plausibility. These pathways are indicated by a thin dotted line connecting the two potential positions to a different Possible World.

The following numbered paragraphs outline how the concept of heterotopia is described in the Portolan chart making use of key terms either drawn from, or that I have associated with, Foucault's six principles of heterotopia. On the Portolan chart they appear as a number of legends presented in a large and a small serif font. The larger font legends relate directly to the heterotopic principles and read; 'difference', 'spatial juxtaposition', 'transitory' and 'accumalatory', 'rituals' and 'gatekeepers', 'illusory' and 'compensatory', 'normative', and finally, 'Functional Mutability'. Please note, the initialisation is a typographic mistake and does not serve to indicate any special purpose. The smaller font legends position space and time and read; 'society within', 'time within', 'society without', and 'time without'.

1. The word 'difference' is set above the phrase 'society within' and both are set inside the thick lined misshapen oval which represents the boundary of a heterotopia. The first principle acknowledges heterotopias ubiquity and variety. However, Foucault identifies two main categories of heterotopia, those of crisis and those of deviation, the boundaries of which may overlap. To compare, heterotopias of crisis are defined as 'privileged or sacred or forbidden places, reserved for individuals who are, in relation to society and to the human environment in which they live, in a state of crisis', while heterotopias of deviation are defined as 'those in which individuals whose behavior is deviant in relation to the required mean or norm are placed' (Foucault, 1984). Essentially, people may either form, choose to enter, or be placed into, heterotopic spaces by virtue of their 'difference' from a normative state. Difference is the key driver for heterotopia.
2. The phrase 'Functional Mutability' is set above the phrase 'time without' and both are set outside the thick lined circle which represents the boundary of the world. In the second principle, Foucault takes an expanded view of time, akin to the *longue durée*, to argue that 'a society, as its history unfolds, can make an existing heterotopia function in a very different fashion' (Foucault, 1984). The purpose of a heteretopia is not fixed and though it is culturally specific, cultures can change over time. The term 'Functional Mutability' is intended to point to the changeability of purpose and its setting is intended to suggest the role that time plays in allowing shifts in culture to emerge. Only by altering the relation with temporality can a vantage point be attained to witness function as changeable and culture as emergent. For Foucault this perspectival shift is historical, though it does not have to be.

3. The phrase 'spatial juxtaposition' is set within the boundary of the misshaped oval at a 90 degree angle from the main axis that the rest of the diagram's text is set on. It is intended to emphasise the key attribute of Foucault's third principle which states that heterotopias are 'capable of juxtaposing in a single real place several spaces, several sites that are in themselves incompatible' (Foucault, 1984). Foucault notes theatres, cinemas, gardens and carpets as examples of heterotopia whose spaces hold other spaces within them. These heterotopia are places where space is experienced differently.
4. Inside the misshaped oval that denotes heterotopia, is a smaller oval marked with a thick dotted line. Around it are the terms 'transitory' and 'accumalatory' and set between them is the phrase 'time within'. These terms are referenced in the Portolan chart as aspects of heterochronies. The dyad, 'transitory' and 'accumalatory', refer to different ends of a spectrum related to our experiencing of 'time within' a heterotopia in terms of celerity; the swiftness of its movement. Foucault argues that the fourth principle links heterotopias to 'slices in time—which is to say that they open onto [] heterochronies' (Foucault, 1984). Time is experienced differently.
5. In the fifth principle, the terms 'rituals' and 'gatekeepers' reference the idea that 'Heterotopias always presuppose a system of opening and closing that both isolates them and makes them penetrable' (Foucault, 1984). The thick line describing the misshapen oval that represents heterotopia has the terms 'gatekeepers' and 'rituals' set next to an image of a key to represent this penetrability.
6. Inside the thick line describing the actual world are the terms 'society without' and 'normative'. Interior to these terms is a large circle marked with a dotted line set alongside the terms 'illusory' and 'compensatory'. And inside that is the thick line describing the misshapen oval that represents heterotopia and the terms 'society within' and 'difference'. The dotted line separates the perspectives of 'society within' and 'society without', those experiencing the heterotopic space and being viewed within it and those not experiencing the heterotopic space and viewing it from without. The sixth principle notes how heterotopias 'function in relation to all the space that remains' (Foucault, 1984) offering either 'illusory' or 'compensatory' spaces in contrast to the normative state. Whether a space offers illusion or compensation relates to the position of those making the assessment.

In short, heterotopias are sites that are centred around *othered people*, that over time may change and be put to *other uses*, that incorporate dissonant *other places* and *other times*, they permission non-normative *other states* and have *controlled* access.

Levitas argues that we can usefully understand ‘utopia as a method rather than a goal’ (Levitas, 2013, p. 33) by setting aside a hermeneutic approach and adopting it a constructive method. I think that the same is true of heterotopia. This being the case, the concept offers a participatory design fiction a way to address the formation of worlds from non-normative standpoints. The principles of heterotopia provide a heuristic for the creation of imagined products and their fictional world, with difference becoming the start point for the creation of sites of encounter with technological products from across the digital and physical realms.

#### 4.1.12 Discursive Space



Figure 4.4 Discursive Space

Knowledge or insights from design fictions emanates from one of two places; the making or the sharing. The researcher may focus on the making of the diegetic prototype itself or the making of the fiction through the imagined socialisation of the diegetic prototype. Any further gathering of insights is based on an audiences’ engagement with the design fiction and therefore on whether a design fiction generates a discussion around it.

The marker on the Portolan chart to denote these issues is a question mark with a circle about it, around which the phrases ‘Discursive Space’ and ‘A Design Space’ are inscribed. A dotted

line leads up from the inscribed circle toward *The Rivers of Speculation*. It is interrupted by a text, which reads as follows, ‘In the hope of the formation of discursive spaces & perhaps even the newest discoveries arising from the formulation of speculations, design concepts & diegetic prototypes’. In the first part of this sentence, the ‘hope’ I refer to is not a vague aspiration, ‘the formation of discursive spaces’ is a strived for effect that forms an essential part of the design fiction process. Vagary is reserved for the second part of the sentence. Speculations, design concepts and diegetic prototypes are outputs from the design fiction process.

## 4.2 A Miscellany

The elements introduced below include various placeholders designed to hold inputs and a miscellany of objects that were collected, or made, to represent or engage with various concepts related to a participatory approach to design fiction. The miscellany of other artefacts include; Theory Board (section 4.2.1), Tablet (section 4.2.2), Design Fiction Volvelle (section 4.2.3), Paper Theatre of Design Fiction (section 4.2.4), Platform for the Paper Theatre of Design Fiction (section 4.2.5), Crystal ball, Sandglass, Compass (section 4.2.6) and Placeholders (section 4.2.7).

### 4.2.1 Theory Board



Figure 4.5 Theory Board and Volvelle

The *Theory Board* began as an attempt to clarify the relations between the different orientations toward ‘the made thing’ and conceptions of the ‘world’ at play within design fiction

practices. Below, I describe a main artefact, the *Theory Board*, and the next sections describe two supplementary artefacts, the *Tablet 4.2.2* and the *Design Fiction Volvelle*, 4.2.3.

A brief physical description of the *Theory Board* follows. The *Theory Board* is a one foot square and one inch thick ply board structure. The topside is inscribed with legends and visual markers and has holes in numerous positions to accept two other artefacts, a small circular *Tablet* and a larger circular platform that acts as a base for a number of inscribed concentric rings, the *Design Fiction Volvelle*. Viewed from the top, each side of the square is marked 'Actual, Possible, Impossible' and 'Fictional'. A large circle is centred in the structure, inside the circle an inscription reads 'Non-Actual Possible Object'. It is bisected by numerous lines emanating from the centre of each side and each intersection is marked by a hole. Either side of the 'Actual' heading are the legends 'Critical' or 'Affirmative', and by the 'Possible' are the legends 'Possibility' or 'Actuality'. Next to the 'Impossible' are the legends 'Mundane' or 'Fantastic', and beside the 'Fictional' are the legends 'Diegesis' or 'Mimesis'. If angled to see the adjacent perpendicular side then the full legends read as follows; 'Actual World', the 'Possible World', the 'Impossible World' and the 'Fictional Story/World'. Read at this tilt, the viewer can see that the 'Actual World' is marked as also being 'Complete' and 'Consistent'. The 'Possible World' is also 'Consistent' and 'Complete'. However, the 'Impossible World' is 'Complete' yet 'Inconsistent'. Finally, the 'Fictional Story/World' is variously marked as 'Inconsistent/Consistent' and 'Incomplete/Complete'.

Previously, see 4.1.2, I noted Yagisawa's warning that 'the idea that fictional objects are possible objects should not be accepted blindly' (Yagisawa, 2022). The *Theory Board* addresses the ontological messiness surrounding, and also the disciplinary orientations towards, the made thing at the centre of the *Design Fiction Volvelle*, see 4.2.3.

### **The Actual and the Impossible**

The 'Critical' and 'Affirmative' dyad draw on Dunne and Raby's articulation of orientations towards design actions (Dunne and Raby, 2013, p. vii). This activity is conducted in, and aimed at changing, the 'Actual World' in various ways, this world is necessarily by virtue of its existence 'complete' and 'consistent'.

The 'Mundane' and the 'Fantastic' dichotomy are commonly understood as orientations towards the making of science fiction, see 2.4.1. However, all fabulations are related to the 'Impossible' by virtue of an authorial choice to accept, or refute, the constraints of the actual world. This is equally true of Design's prefigurations. If an author, or designer,

orients themselves too far towards the ‘Fantastic’ they create an ‘Impossible World’ that is ‘Inconsistent’ with the ‘Actual World’, however ‘Complete’ it may be.

Placing the ‘Actual World’ and the ‘Impossible World’ to face one another puts these orientations, ‘Critical’/‘Affirmative’, and ‘Mundane’/‘Fantastic’, into conversation. The *Theory board* is designed to accept the *Design Fiction Volvelle*. The decision as to where to place it is intended to help make explicit the designer’s authorial stance towards these orientations.

### **The Possible and the Fictional**

How do we view the status of the made thing at the centre of its probable or plausible world that the *Design Fiction Volvelle* highlights? The ‘Fictional Story/ World’ and the ‘Possible World’ are set against each other in order to question the designer’s authorial stance towards the ontological status of fiction. Do they believe that the design fiction presents a ‘Possible World’ or a ‘Fictional World’? Do they consider ‘Possible Worlds’ as an ontological or metaphorical construct?

Ryan describes ‘The theory of possible worlds [[as] a formal model developed by logicians for the purpose of defining the semantics of modal operators—primarily those of necessity and possibility’ (Ryan, 1991). In this context, the dyad ‘Possibility’ and ‘Actuality’ loosely point to two opposing positions within the philosophies of possibility, *actualist representationism* and *possibilist realism* (Yagisawa, 2022). However, I set these approaches aside as overly complex and somewhat off-topic to the needs of this study.

The ‘Possible World’ of narrative theory has taken up the logicians’ analytical tools to reengage with ‘the problem of truth in fiction and in the relation between semantic domains and reality’ (Ryan, 1991, p. 3). In this context ‘Fictional worlds are possible worlds in that they are ensembles of nonactualized possible particulars—persons, states, events, and so on’ (Doležel, 1998, p. 786). This is where Markussen et al. has recognised value for design fiction, stating that ‘Like a fictional text, a design fiction artefact projects a new actual world of its own that we can experientially engage in and where some fictional facts must be taken for granted’ (Markussen et al., 2020). In this theory the dyad ‘Possibility’ and ‘Actuality’ denote a ‘fundamental split in ontology’ (Doležel, 1998, p. 786) between actualism or possibilism. Doležel describes the split thusly,

For possibilism, the actual world ‘does not have a different status’ within the set of possible worlds, while for actualism the actual world is ‘a standpoint outside



the system of possible worlds from which judgments of actuality which are not world relative may be made' (Doležel, 1998, p. 786).

Finally, the words 'Possibility'/'Actuality' set around the 'Possible World' may represent an ordinary language understanding of the terms. In this approach an imaginary participant might describe a personal understanding of the relation between the actual world and the one made possible by the *Design Fiction Volvelle* is expressed in terms of 'Possibility' and 'Actuality'.

The modal logicians' philosophies of possibility, the literary theorists' narrative theory, or the participant's ordinary language take on the term 'Possible World' each demonstrate a different approach towards the concept of Possible World.

I looked to Aristotle to develop an understanding of 'Diegesis', which can be understood as narration, and its dyad, 'mimesis', which may be understood as imitation or representation. Simply, diegesis tells and mimesis shows. These are the building blocks of fictional presentation. However, to disambiguate, the term 'diegetic' in 'diegetic prototype' (Kirby, 2010) does not share this understanding. Emanating from film studies, the term 'diegetic' refers to everything that takes place within the 'Fictional Story / World' and its counterpart is the term non-diegetic, that is anything which takes place outside this realm (Kirby, 2010). In making a design fiction, the 'diegetic prototype' as an artefact narrates itself and the world about it and in doing so design fiction calls on both the Film studies and the Aristotelian understandings of the concept. The nature of the resultant 'Fictional Story / World' is such that it may be either 'Inconsistent' or 'Consistent' and 'Incomplete' or 'Complete'. A story must be consistent and complete in its telling. However, a world is necessarily incomplete in that not everything about an entire world can be made explicit by the author.

Some kind of theoretical negotiation must take place when the 'Fictional Objects' of the *Design Fiction Volvelle* are presented to the *Theory Board*. Either the *Fictional Objects* are encompassed by some theory that can accommodate 'Non-actual possible objects' under Possible World theories or another approach must be found under theories of fictional representation.

Adopting the Walton theory of make-believe releases one from the need to make the theoretical negotiation described above. The theory of make-believe (Walton, 1990) is used by Dunne and Raby to underpin their work (2013, p. 90). Yagisawa argues that the theory of make-believe appears useful as

According to this pretense theory, the pretense involved in the language game of fictional discourse shields the whole language game from a separate language

game aimed at non-fictional reality, and it is in the latter language game that we seek theories of objects of various kinds as real objects (Yagisawa, 2022).

Note that though there is no compulsion to do so, this approach too can be read through possible world theory, as Ryan notes ‘There is only one actually actual world, but there is an infinity of potentially pretended worlds’ (Ryan, 1991, p. 24).

### 4.2.2 Tablet

The two supplementary artefacts that the *Theory Board* accepts are markers for actual and fictional objects.

The *Tablet*, the small wooden disc, mentioned previously, is inscribed with the heading ‘Actual Object’ and the body text ‘Made Things – Physical artefacts, laws, rules, policies, processes and human activity systems’. I intended the *Tablet* to be understood as separate from the rest of the *Theory Board*. It is used to set aside actual objects, literally, as it swings beyond the boundary of the *theory board* on a brass beam.

### 4.2.3 Design Fiction Volvelle

The *Design Fiction Volvelle* has the heading ‘Fictional Object’ inscribed at its outer rim, this large circular platform acts as a base for a number of inscribed concentric rings. The centre most concentric ring is ‘a made thing’ thereafter expanding outwards a new ring is marked by each comma in the following list; ‘exists for, agents/non-agents, set in, mainstream society/non-mainstream society, forming, a probable world/a plausible world’. This wooden version of a volvelle is inspired by the traditional one, which was ‘a rotating paper ‘wheel chart’, often found in early astronomy or mathematical books’ (Chapman, 2019). Effectively, they operated as inexpensive astrolabes.

While the *Tablet* is a marker to set aside actual objects the *Design Fiction Volvelle* is a tool to critique design fictions at a basic level. If one looks at a design fiction and set the key dualities, agents/non-agents, mainstream society/non mainstream society, and probable/plausible worlds, from innermost to outermost ring, then the *Design Fiction Volvelle* encourages one to answer the following questions: ‘What is the technology?’, ‘Who, or what, is it for?’, ‘What is its context?’ and ‘How likely is it to come to pass?’.



Figure 4.6 The Volvelle and Tablet sit on the Theory Board

#### 4.2.4 Paper Theatre of Design Fiction



Figure 4.7 Design Fiction 'Paper Theatre'

As noted previously the *Design Fiction Volvelle* can be mounted on to the *Theory Board*. It can also be mounted onto a second circular plate of the same dimension that has a thin extension which reaches out to a small circular mount. Atop this small mount sits a *Paper Theatre of Design Fiction*, a cut-out scene, made in a very thin plywood.

The *Paper Theatre of Design Fiction* has seven panels. Centremost is a cube, a black box raised on a stem, moving outwards on one side there is a group of people standing, then a set of theatrical curtains pulled open and finally a simple thin frame like that of a screen. On the other side moving outwards from the cube is a group of people one of whom uses a wheelchair, then a set of theatrical curtains pulled open and finally an ornate picture frame.

This simple representation serves as a reminder that technology is at the centre of design fiction. That within many technological innovations, a choice is made regarding whose lives to place in the foreground and whose in the background. That the near-future presented at

the outset of a technological innovation is a fiction, akin to those presented on the stage. That it is the role of design fiction to *re-present* trends in technological innovation, primarily through visualisations of near-futures in the still or moving image. That design fiction is an entertainment intended to provide a platform for a discursive space about near-future technological innovation for an audience, perhaps even becoming a part of future design spaces. A design space may be understood as – ‘the network structure of related designs ... visited in an exploration process’ (Woodbury and Burrow, 2006a). Finally, it demonstrates that changing focus from the mainstream to the marginal opens new perspectives on the social implications of a technological innovation.

When placed, the *Paper Theatre of Design Fiction* is raised slightly above a circle marked ‘Possible World’ and shaded by a circle beneath it that forms a crescent shape. This slight separation is purposeful, as the status of the design fiction as presenting a fictional world or a possible world is unresolved. It is an ontological decision for each research study that makes use of the method.

#### **4.2.5 Platform for the ‘Paper Theatre of Design Fiction’**

The *Paper Theatre of Design Fiction* may also be set on a platform inscribed with the words ‘Discursive Space’ and ‘A Design Space’. The platform accepts a pin that holds a tiny tablet marking the presence of an ‘Audience’. Placing the *Paper Theatre of Design Fiction* on this platform and setting on the Portolan Chart where it is marked ‘Discursive Space’ and ‘A Design Space’ is intended to mark the presentation of a design fiction to an audience. The phrases ‘Discursive Space’ and ‘A Design Space’ speak to the rationale for engaging in design fiction as it may be conceived as an act of communication or as part of design process. Obviously, the reason behind any presentation is dictated by the research project’s remit. As such, the design fiction may be published widely or shared with a specific group, and the audience may be understood to be, to varying degrees, ‘open’ or ‘closed’ respectively.

Tharp and Tharp developed a model to describe the dimensions at play setting an internal vs external horizontal axis against a terminal vs instrumental vertical axis (2013). In Tharp and Tharp’s articulation of Discursive Design the internal vs external described the relationship with an audience, while the terminal vs instrumental describes a methodological consideration. The term ‘internal’ relates to work adding to a disciplinary discourse, while ‘external’ describes work aimed beyond the disciplinary discourse. The word ‘terminal’ references the idea that the designer simply puts a speculative design into the world, where their work ends,

and any audience reaction is beyond their control, while ‘instrumental’ sets the speculative design within a wider research programme where it is used towards other ends.

#### 4.2.6 Crystal ball, Sandglass and Compass



Figure 4.8 A crystal ball, a brass compass and a sandglass

The brass compass and sandglass are included to represent the temporal and spatial concerns at hand, while the crystal ball represents a focus on the future, they are pictured in figure 4.8.

A circular mount raised up by three brass bolts holds the crystal ball, otherwise known as a ‘scrying’ ball. Its inclusion creates an opportunity to consider both the act of engaging with the future and what can be known. It sits on a circle with a question mark in its centre, which is adjacent to *The Technology Stream* which is marked by the phrases ‘Design Space’ and ‘Design Object’. Here, I take the ‘Design Object’ to be a specific design candidate and the ‘Design Space’ as ‘the network structure of related designs that are visited in an exploration process’ (Woodbury and Burrow, 2006b).

The sandglass, which is also known as an hourglass, takes just 150 seconds to turn from full to empty. It acts as a reminder of the brevity of workshop situations.

The brass compass makes explicit the choices to be made between two different directions that might be travelled. Inside its lid is the Robert Frost poem *The Road Not Taken*, a brief meditation on the necessity, and importance, of choice. I’ve included it in the appendices, see A.1, in its entirety, simply because it is rather beautiful. I hope you’ll take more than a

moment to consider it. Just as I did, when I was given it to encourage me to recognise that a life changing choice had to be made— Reader, I married her.

#### 4.2.7 Placeholders

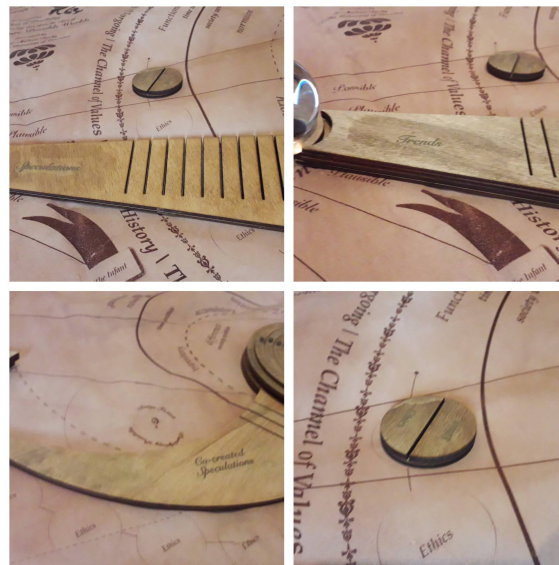


Figure 4.9 Placeholders

The ‘Ethics’, ‘Trends’, ‘Speculations’ and ‘Co-created Speculations’ placeholders are a set of objects that are designed to accommodate blank business cards and sit on specific elements of the Portolan chart.

The ‘Ethics’ placeholders are sized to sit atop the ten circles set along ‘the line of ethical consideration’. There are ten discs each with a slot cut across the diameter which allows a card to be displayed upright. These placeholders allowed me to play with the ethical arguments at the heart of different design fictions by articulating a position on either side of the card.

The ‘Trends’ and ‘Speculations’ placeholders are sized to sit within the probable part of the futures cones, each placeholder has ten slots cut to allow cards to be displayed. They are shaped as isosceles triangles and have a curve cut out at the point and another cut out from the shortest side of the triangle. These placeholders allowed me to present the potential trends (and weak signals) that I wanted to experiment with, as well as being able to highlight probable speculations.

The ‘Co-created Speculations’ placeholder is a crescent shape with a curved cut out reminiscent of a scimitar. It has three slots cut to allow blank cards to be displayed and is designed to touch on the edge of the ‘Speculations’ or ‘Trends’ placeholders and to fit to the circular shape of the ‘Design Fiction Volvelle’, see section 4.2.3. The smaller number of slots for co-created speculations were intended to recognise a reduction in speculations arising through the participatory process.

## 4.3 Omissions

The Portolan chart and the miscellany of objects collected around it were themselves an exercise in worldbuilding. It was approached as an honest fiction, that declared itself as fictional in its material selection –plywood rather than wood– and construction techniques –the accuracy of laser cut pieces. Anachronistically, its language and aesthetic were archaic yet its subject current. Also, its authorship is clearly asserted, as is the date of its making, with the concept of time being held very loosely. I imagined an alternative present in which an alternative Mr. Darby made a number of artefacts to help people navigate and think about the future. As part of this process, I was calling on the past for its help in conferring authority on the artefacts that I was making in the present. Then from the perspective of the actual world, where I was a researcher, I could examine these pre-modern technologies of futures exploration and navigation.

The artefacts support each other. Some are props, like the brass compass and the sandglass, that act as signifiers. Others can be considered prototypes as they are significant attempts to expose theory or aspects of practice in tools. Together they develop a coherent and complete world, even though some concepts relevant to the research were not drawn out. To address this omission, the next two sections address technology, open futures and social imaginaries.

### 4.3.1 Three theories of technology

I omitted from the section 4.1.8, The Wind Gods, a discussion of the theoretical implications of adopting a view of technology that is characterised by social change as much as by potentiality. Coming into the research study, my assumptions that technology was obviously contestable and undeniably value laden meant that I failed to consider the possibility of other theoretical perspectives.

Feenberg argues that there are two main sets of theories of technology, instrumental and substantive (Feenberg, 2002, p. 5). Instrumental theories are widely held and ‘based on the commonsense idea that technologies are “tools” standing ready to serve the purposes of their users. Technology is deemed “neutral”, without valuative content of its own’ (Feenberg, 2002, p. 5). Less commonly held are substantive theories that argue that ‘technology constitutes a new cultural system that restructures the entire social world as an object of control’ (Feenberg, 2002, p. 6). If it is the case, as he asserts, that in both substantive and instrumental theories, ‘*Technology is destiny*’ (Feenberg, 2002, p. 8), Feenberg’s emphasis, then design fiction can serve no purpose.

However, Feenberg proposes a third theory called, a Critical Theory of Technology, which argues that technology is

[ ] an ‘ambivalent’ process of development suspended between different possibilities. This ambivalence of technology is distinguished from neutrality by the role it attributes to social values in the design, and not merely the use, of technical systems. On this view, technology is not a destiny but a scene of struggle. It is a social battlefield, or perhaps a better metaphor would be a ‘parliament of things’ in which civilizational alternatives contend (Feenberg, 2002, p. 15).

As design fictions engage with change they query technological progress, open it to debate and highlight the potentiality of the future as a site of social contestation. In doing so they implicitly acknowledge that ‘[ ] what depends on a social force can be changed by another social force: technology is not destiny’ (Feenberg, 2002, p. 64). It is on the Critical Theory of Technology’s ‘battlefield’ that design fiction finds its purpose. Any future amendment to the Portolan chart needs to acknowledge that.

### 4.3.2 Open futures and Social imaginaries

I omitted to visualise or give any significant indication of the role of either open futures or social imaginaries in my account.

Referring back to the discussion of open futures in section 2.2, drawing on Luhmann’s theory of social time, the possibility space represented by Voros’s futures cones may be understood as an *open future* undergoing the processes of futurization – the opening up to potential futures – and of defuturization – the closing down of potential futures – in a constant complex interplay moving toward, but never realizing, a single present (Luhmann, 1976). The processes of futurization and defuturization are formed and informed by ‘multiple



modernities', of which Western modernity <sup>1</sup> is but one, which can be viewed as synonymous with social imaginaries (Taylor, 2002, p. 91). Social imaginaries may be defined as

macro-mappings of social and political space through which we perceive, judge, and act in the world. These deep-seated modes of understanding provide the most general parameters within which people imagine their communal existence (Steger, 2012).

In common with both histories and futures, the present is pluralistic and deeply contested (Urry, 2016, p. 7). This contestation plays out in an *open future*, which is made up of *future presents*, the political, economic, social and technological opportunities of the moment, and *present futures*, the discourses of potentiality expressed by various visions and visualizations that enact possible futures (Luhmann, 1976).

My *longue durée* offers an embodied articulation of all time from the position of a collective human perceived present. When viewed at this scale multiple social imaginaries have been abandoned, established and are in the process of emerging. There remains also an ever present potentiality of, as yet, unimagined possibilities. Admittedly, these considerations are perhaps more relevant to speculations that do not focus so much on near futures, but they are a relevant part to the wider picture that I attempted to map with the Portolan chart and should be incorporated in any future iteration.

## 4.4 Summary

The bricolage, made up of the Portolan chart and a miscellany of artefacts, explored various theories surrounding design fiction and posited the use of heterotopia as a way to centre non-normative perspectives at the centre of the formation of plausible futures. Then, in response to certain omissions of theory in the bricolage I introduce three theories of technology and consider the role of open futures and social imaginaries.

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<sup>1</sup>I touched on Western modernity in section 4.1.3, with the heraldic achievement acting as a rather British signifier of the notion.



# Chapter 5

## Annotations on facilitations and artefacts

### 5.1 Introduction

Bowers has argued that ‘Annotations make a collection of designed artefacts into a portfolio. They bring together individual artefacts as a systematic body of work’ (Bowers, 2012). The following section introduces how I approached the formation and annotation of outputs produced across two participatory design fiction processes as a portfolio. Thereafter the adapted annotated portfolio is presented prior to further discussion of the ‘mesh of similarities and differences’ that were drawn out through the process.

#### 5.1.1 The annotation

I have chosen to develop and organise the annotations in this portfolio according to approaches to participation and design fiction, as well as through Foucault’s heterotopic principles. The next three parts of this section, see pages 101, 102, and 102, detail the headings under which the annotations are organised. In approaching the annotation in this way, I recognise that rather than generating themes from the subjects of study I have started with themes to look for and at, this approach parallels the deductive approach in thematic analysis.

#### Two participatory approaches

Though Codesign is often used synonymously with Participatory Design the difference may be articulated as a matter of mindset. The latter approach offers a user-as-partner ‘designing with’ mindset and the former is more associated with a user-as-subject ‘designing for’

approach, each emanates from a different design tradition, from the European and US respectively (Sanders and Stappers, 2014b). The democratizing dimension of Participatory Design makes the adoption of a ‘designing with’ mindset a natural course of action. Codesign’s genesis in User-Centred Design and its adoption of a participatory mode of practice to develop products and services creates a potential tension, requiring that the research design and the design facilitation are actively pursued with a ‘designing with’ approach over a ‘designing for’ mindset if alignment with the democratizing values of Participatory Design is sought. As noted in the literature review, see 2.3.1, codesign is defined as ‘collective creativity as it is applied across the whole span of a design process’ and its practices are understood to be situated within the broad range of Participatory Design (Sanders and Stappers, 2008). I have used the phrase ‘participatory approaches’ to capture both the ‘designing with’ and ‘designing for’ orientations to participation more succinctly. However, it is worth distinguishing between these orientations of mindset, both in the study design and the design facilitation, as part of the annotation process. I use the phrases, DESIGNING WITH and DESIGNING FOR, to assist the annotation that follows.

### **Two Design Fiction approaches**

Drawing on discussion in the literature review, see 2.4.4 and 2.4.5, regarding the dominant approaches to Design fiction practice I adopt the terms, WORLD BUILDING and NARRATIVE, to assist the annotation that follows.

### **Six heterotopic principles**

Below, I lay out a brief re-articulation of the six principles of heterotopia, previously described in section 4.1.11, and afterwards, presented in small caps, I identify a key word for each to assist the annotation that follows.

1. Crisis or deviation speak to difference and the characteristics of people othered by normative society. DIFFERENCE
2. Functional mutability describes the ways in which a heterotopia is put to other uses across the course of its existence. USES
3. Spatial juxtaposition describes the quality of heterotopia which allows multiple sites to co-exist even when they may be at odds with one another. The proximity of their co-existence highlights the syntax of space. SPACES

4. Heterochronies highlight the timing, rate, or duration of events, and so the nature of time within the heterotopia may appear to be either transitory or accumalatory. TIME
5. The permeability of the heterotopia is managed by gatekeepers and rituals. PERMEABILITY
6. The relation to space, exterior to the heterotopia, may be illusory or compensatory. RELATION

A site does not have to feature all of the six heterotopic principles to the same degree to be considered a heterotopia. Foucault's heterotopology features several instances that do not demonstrate all of the principles evenly.

### 5.1.2 The portfolio

The rationale for the inclusion of design concepts, diegetic prototypes and design fictions within the adapted annotated portfolio is discussed, briefly, below.

The portfolio considers materials created in the ProtoPolicy and What If? projects. Figure 5.1 offers an overview of the outputs of three workshops across the two projects, P1/S1, P2/S2, S3, S4 & S5, and WI2/S9. The overview breaks the workshop outputs down into three parts; design concepts, diegetic prototypes and design fictions.

Firstly, the inclusion of design concepts in the adapted annotated portfolio allows attention to be drawn to the generation of ideas and where they arose in the process. This is particularly important to highlight as part of participatory processes where 'collective creativity' is not 'applied across the whole span of a design process' (Sanders and Stappers, 2008), where participation is a one part of a larger process. Secondly, the incorporation of diegetic prototypes in the adapted annotated portfolio allows focus to be drawn onto the act of making within a fictive realm. Thirdly, and finally, the inclusion of the design fictions allows attention to be centred on the making of the diegetic prototypes' presentation.

The diagram, see 5.1, provides an overview of the workshop outputs, tracking the progression from design concept to diegetic prototype and design fiction. Three design concepts are not discussed in order to balance the discussion within the chapter. These omissions allow me to focus on two design concepts from each of the three workshops.

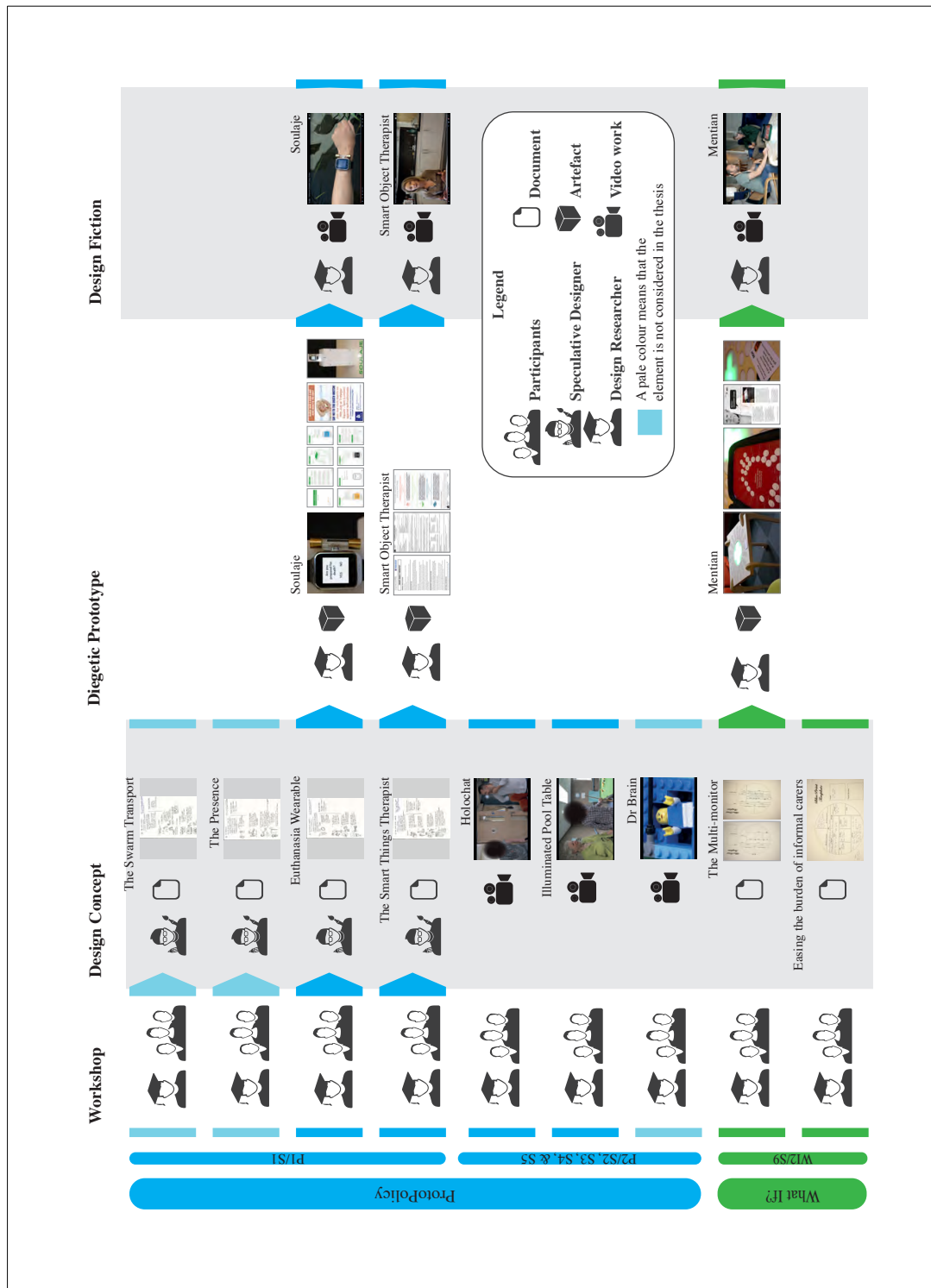


Figure 5.1 Overview of workshop outputs

## 5.2 Annotations on Design Concepts

The following design concepts are annotated below. The annotations are collected around small images, for full size images see Appendix B, as linked to in the following text.

*The Smart Things Therapist* (see figure B.16) and *The Euthanasia Wearable* (see figure B.17) arising from P1/S1 of the ProtoPolicy project.

The *Skype Cafe*, *BT Wifi Umbrella* & *Skype Holochat* (see figure B.20) and the *Illuminated Pool Table* (see figures B.21 ) from P2/S2, S3, S4, S5 of the ProtoPolicy project.

The *Easing the burden on informal carers* (see figure B.29) and *The Multimonitor* (see figures B.27 and B.28) from WI2/S9 of the What If? project.

### 5.2.1 The Smart Things Therapist

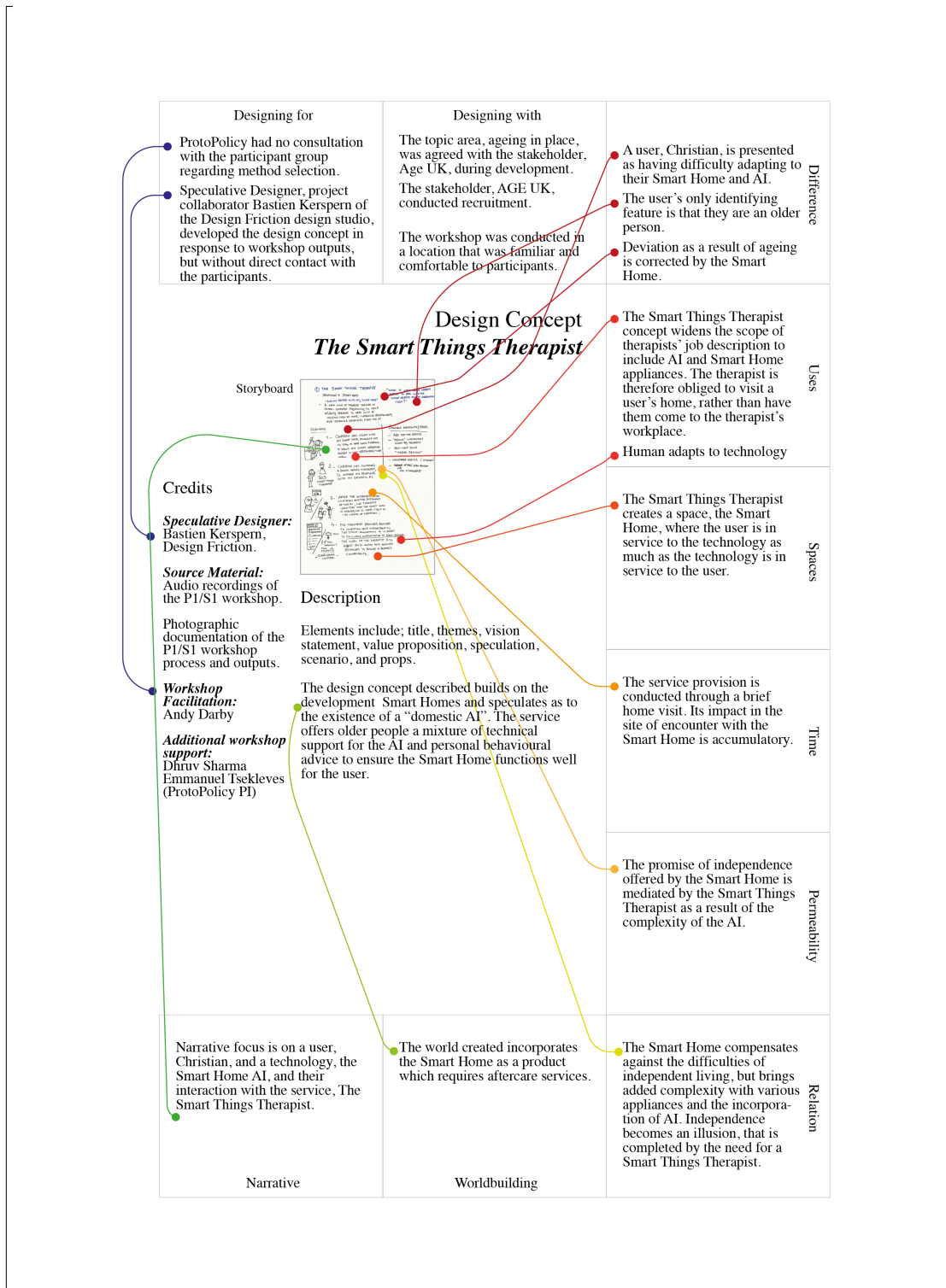


Figure 5.2 The Smart Things Therapist Annotations



### 5.2.2 Euthanasia Wearable

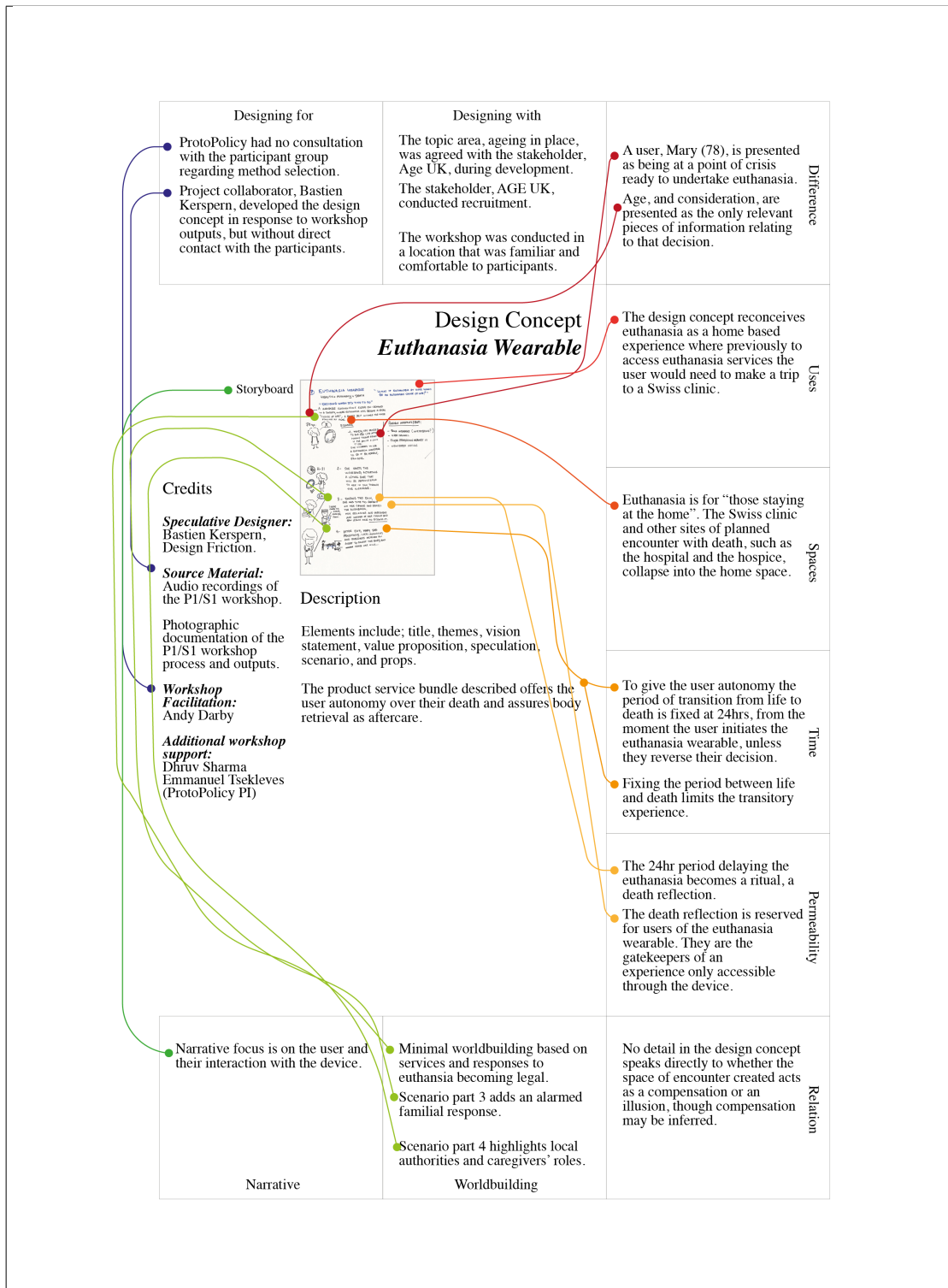


Figure 5.3 Euthanasia Wearable Annotations

### 5.2.3 Skype Cafe, BT Wifi Umbrella & Skype Holochat

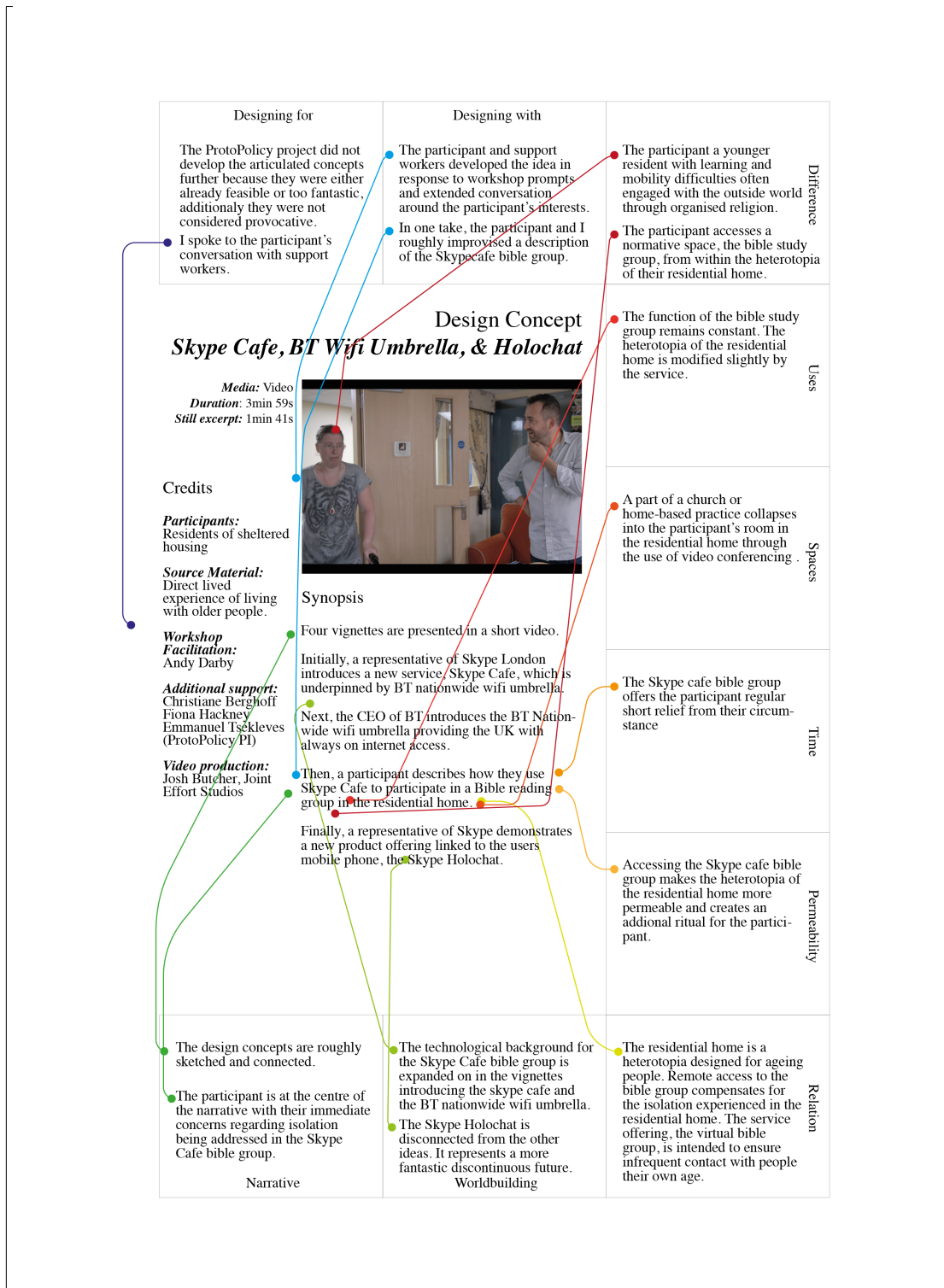


Figure 5.4 Skype Cafe, BT Wifi Umbrella & Skype Holochat Annotations

### 5.2.4 Illuminated Pool Table

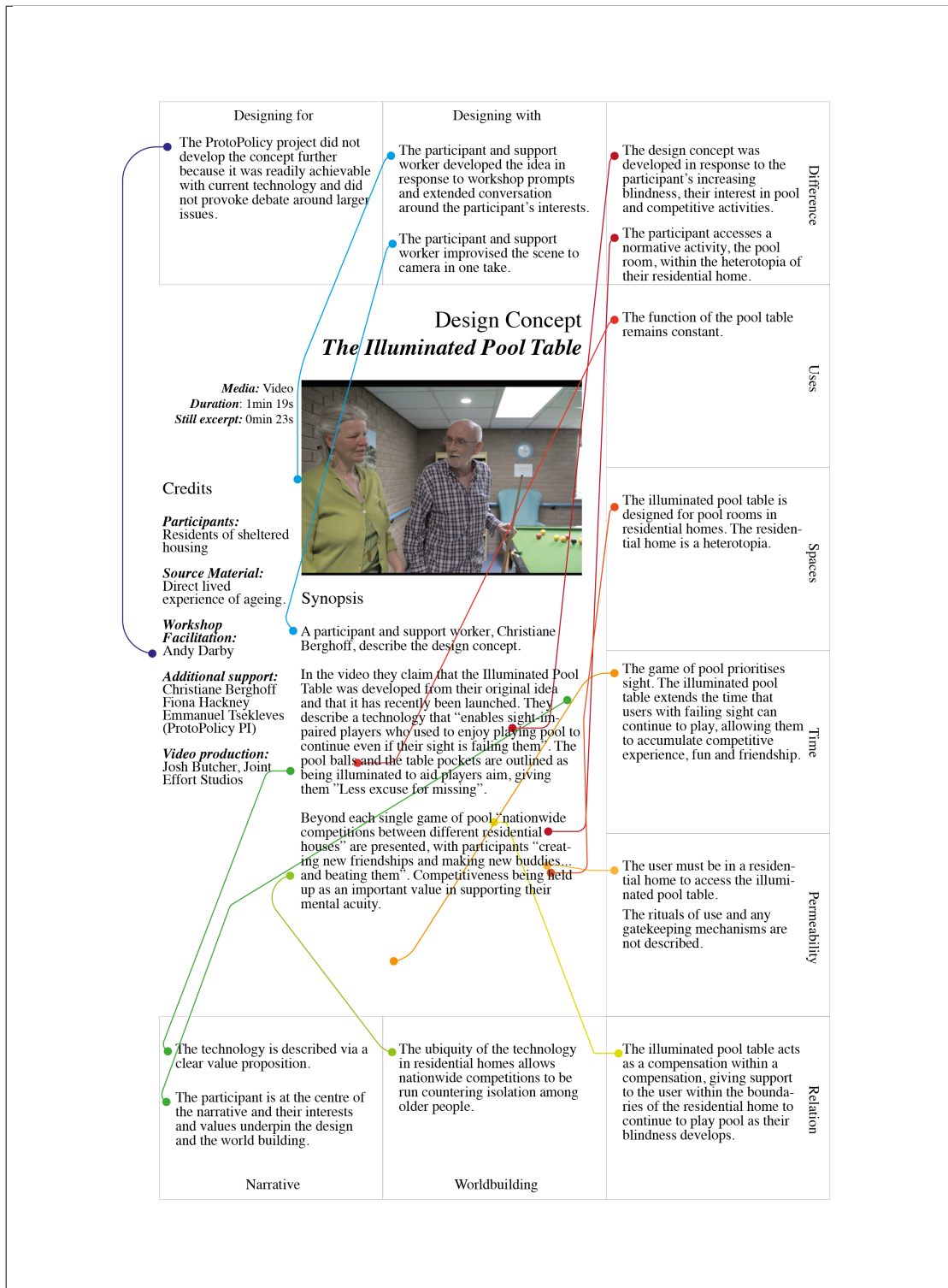


Figure 5.5 Illuminated Pool Table Annotations

### 5.2.5 Easing the burden on informal carers

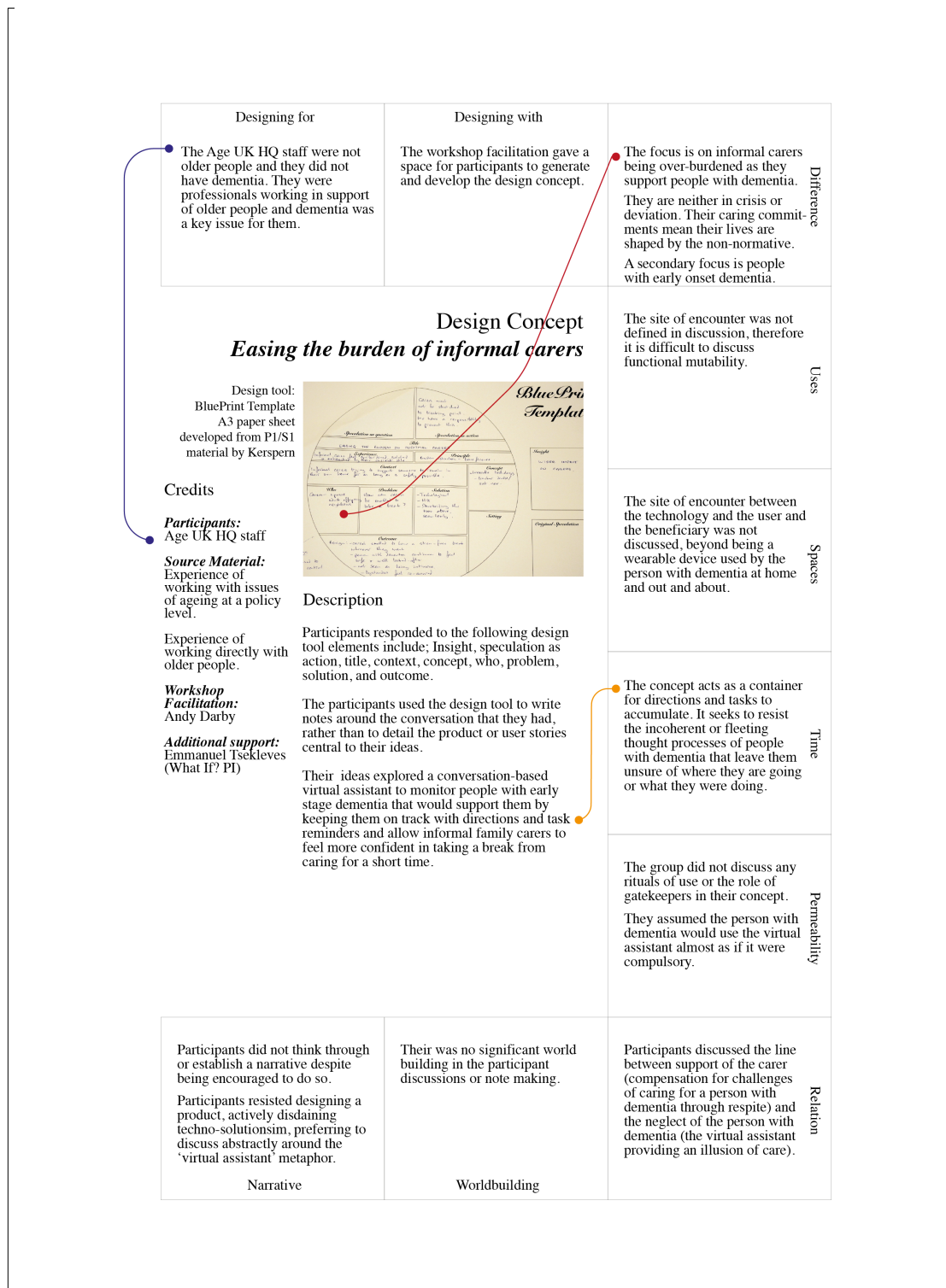


Figure 5.6 Easing the burden on informal carers Annotations

### 5.2.6 The Multi-monitor

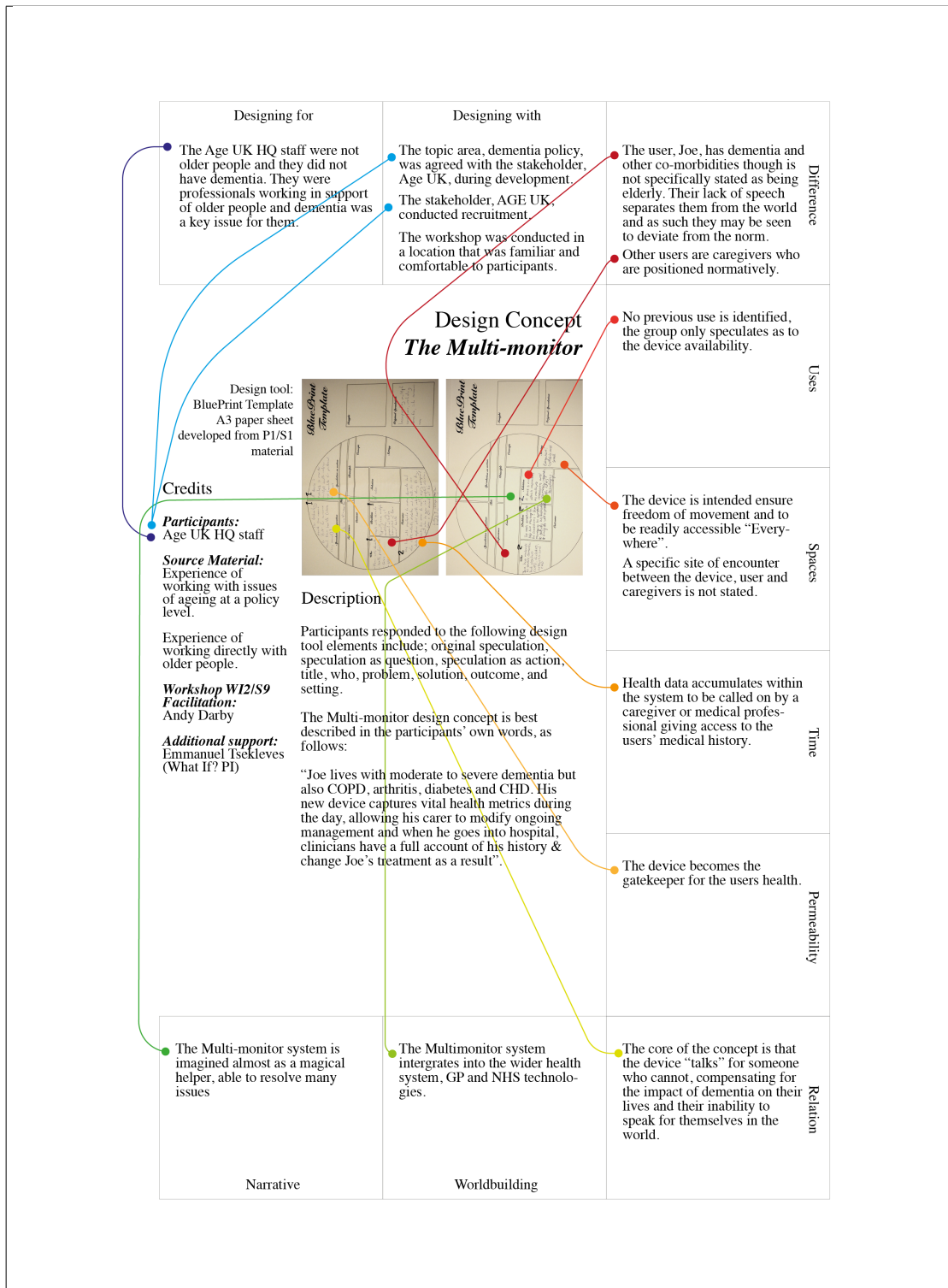


Figure 5.7 The Multi-monitor Annotations

### **5.3 Annotations on Diegetic Prototypes**

The following diegetic prototypes are annotated below. The annotations are collected around small images, for full size images see Appendix B, as linked to in the following text.

Under the heading Smart Object Therapist, see section 5.3.1, are a Job Specification (see figure B.13), an Intervention Report (see figure B.14), and a Reconciliation Guide (see figure B.15) arising from P1/S1 of the ProtoPolicy project.

Under the heading Soulaje, see section 5.3.2, are a User Manual (see figures B.3 and in the appendices B.3, B.4, B.5, B.6, B.7, B.8, B.9 and B.10) and a protest flyer for the Euthanasia Wearable (see figure B.11). There is also the Soulaje euthanasia wearable (see figure B.2). These three diegetic prototypes arose from P1/S1 of the ProtoPolicy project.

Under the heading Mentian, see section 5.3.3, are the Mentian Product Information Sheet (see figure B.23), the Mentian Health Sensor Array (see figure B.24), the Mentian Authorisation Card (see figure B.25), and the Mentian Medical Table (see figure B.26). These three diegetic prototypes arose from WI2/S9 of the What If? project.

### 5.3.1 The Smart Object Therapist

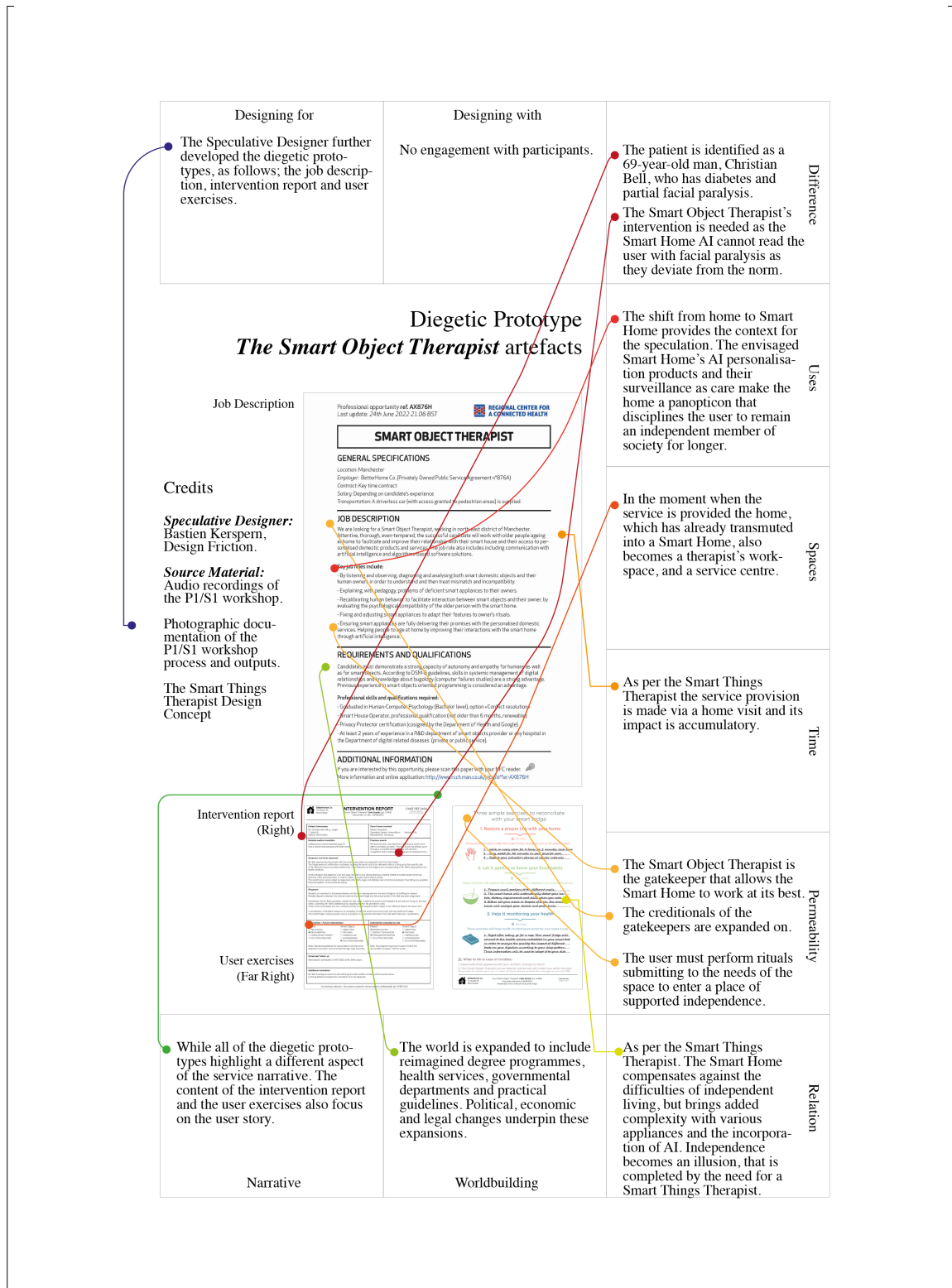


Figure 5.8 The Smart Object Therapist diegetic prototypes annotations

### 5.3.2 Soulaje

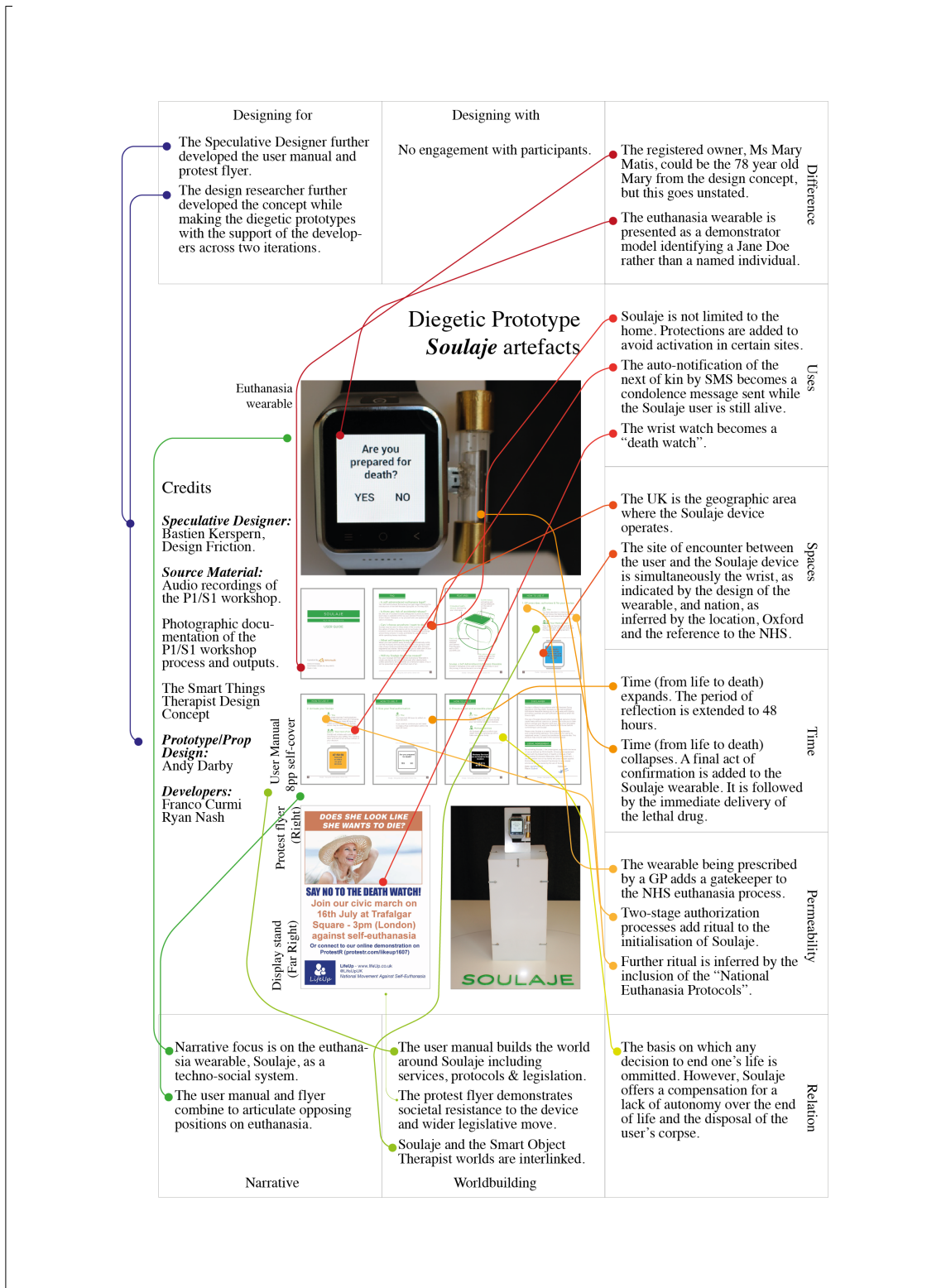


Figure 5.9 Soulaje diegetic prototypes annotations



### 5.3.3 Mentian

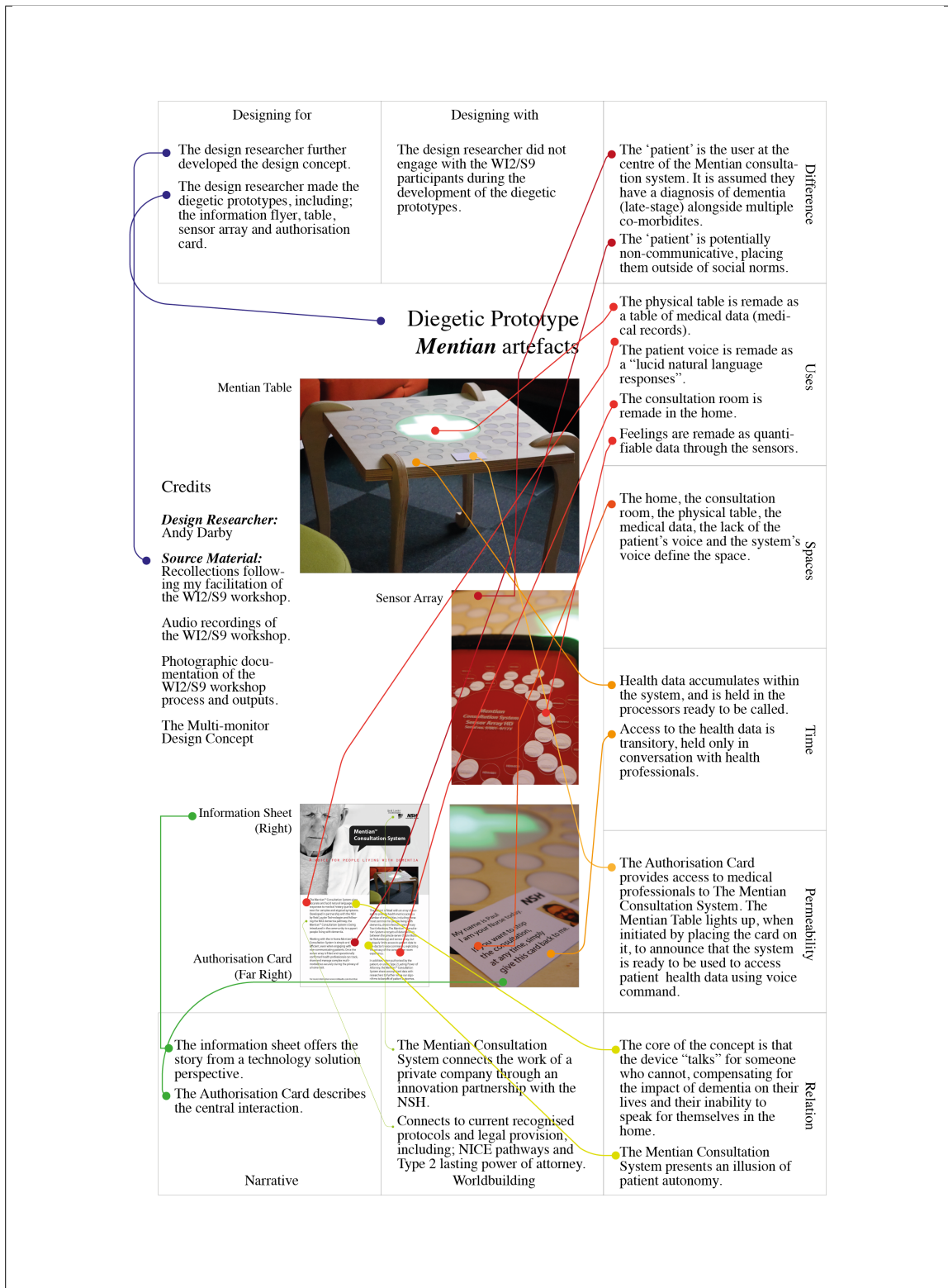


Figure 5.10 Mentian diegetic prototypes annotations

## 5.4 Annotations on Design Fictions

The following design fictions are annotated below. The annotations are collected around stills from the design fiction videos, for full size images see Appendix B, as linked to in the following text.

The *Smart Object Therapist Design Fiction* (see figure B.12) and *Soulaje Design Fiction* (see figure B.1) that arose from P1/S1 of the ProtoPolicy project. The *Mentian Design Fiction* (see figure B.22) from WI2/S9 of the What If? project.

### 5.4.1 Smart Object Therapist Design Fiction

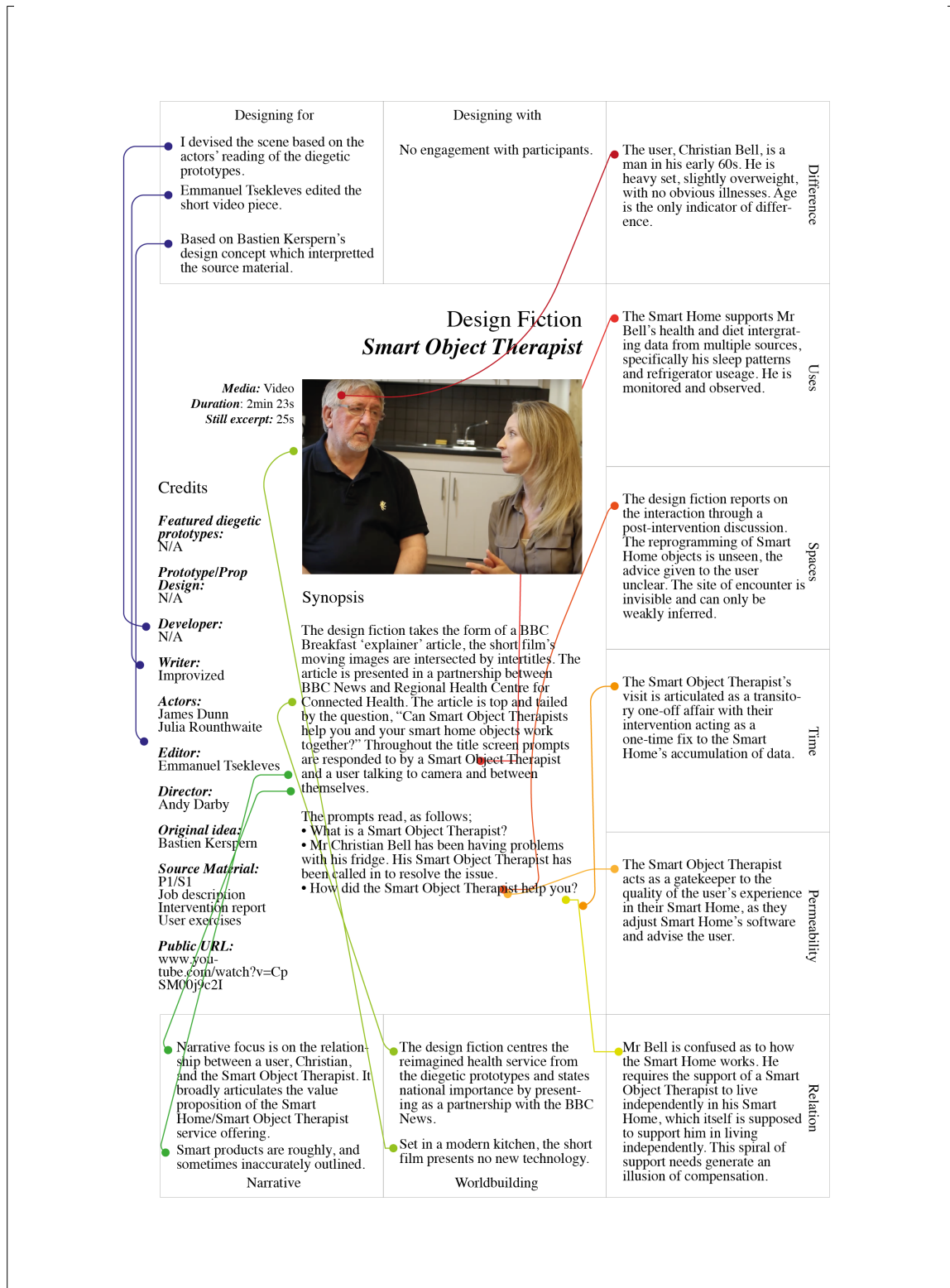


Figure 5.11 Smart Object Therapist Design Fiction annotations

### 5.4.2 Soulaje Design Fiction

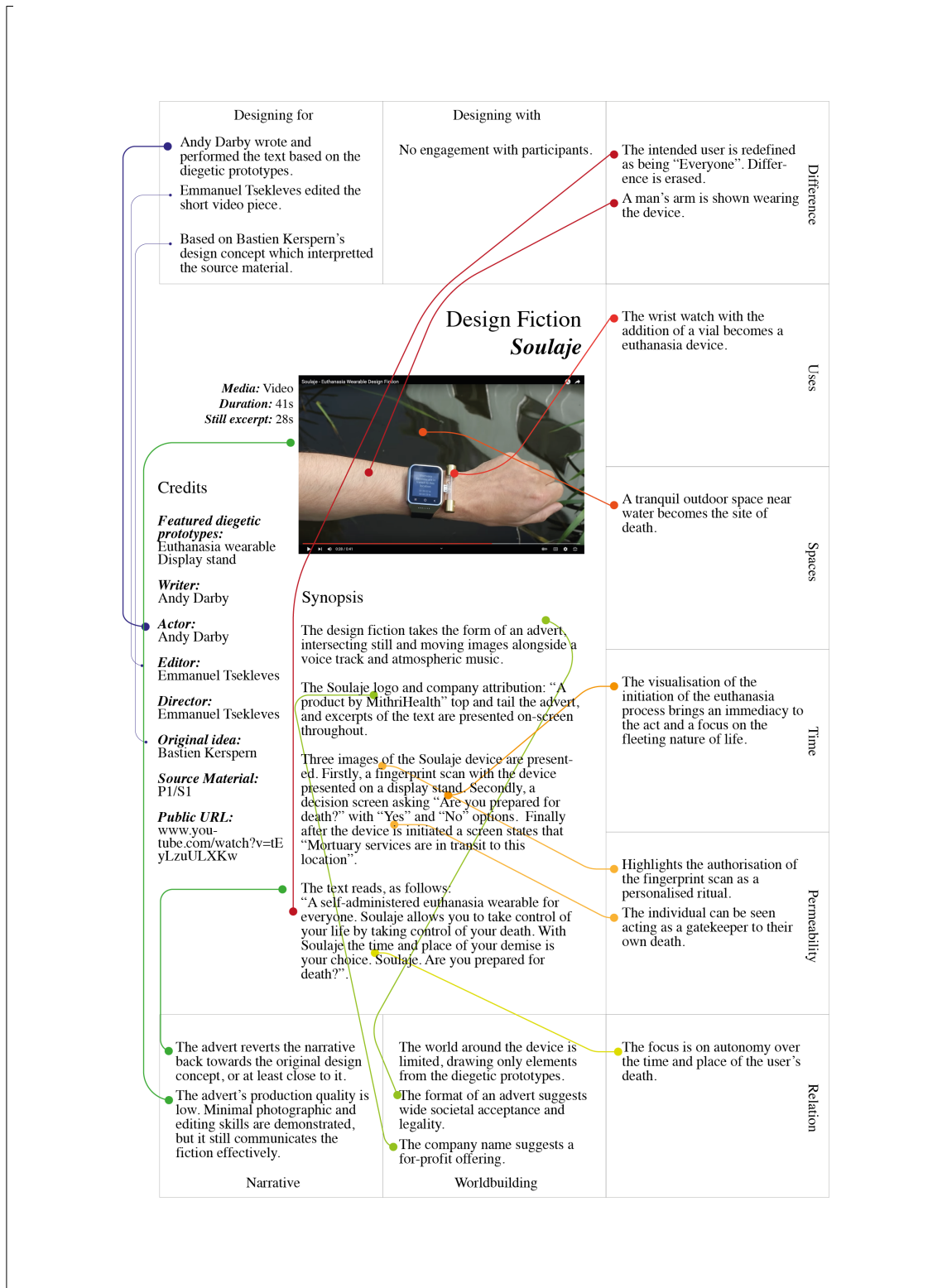


Figure 5.12 Soulaje Design Fiction annotations

### 5.4.3 Mentian Design Fiction

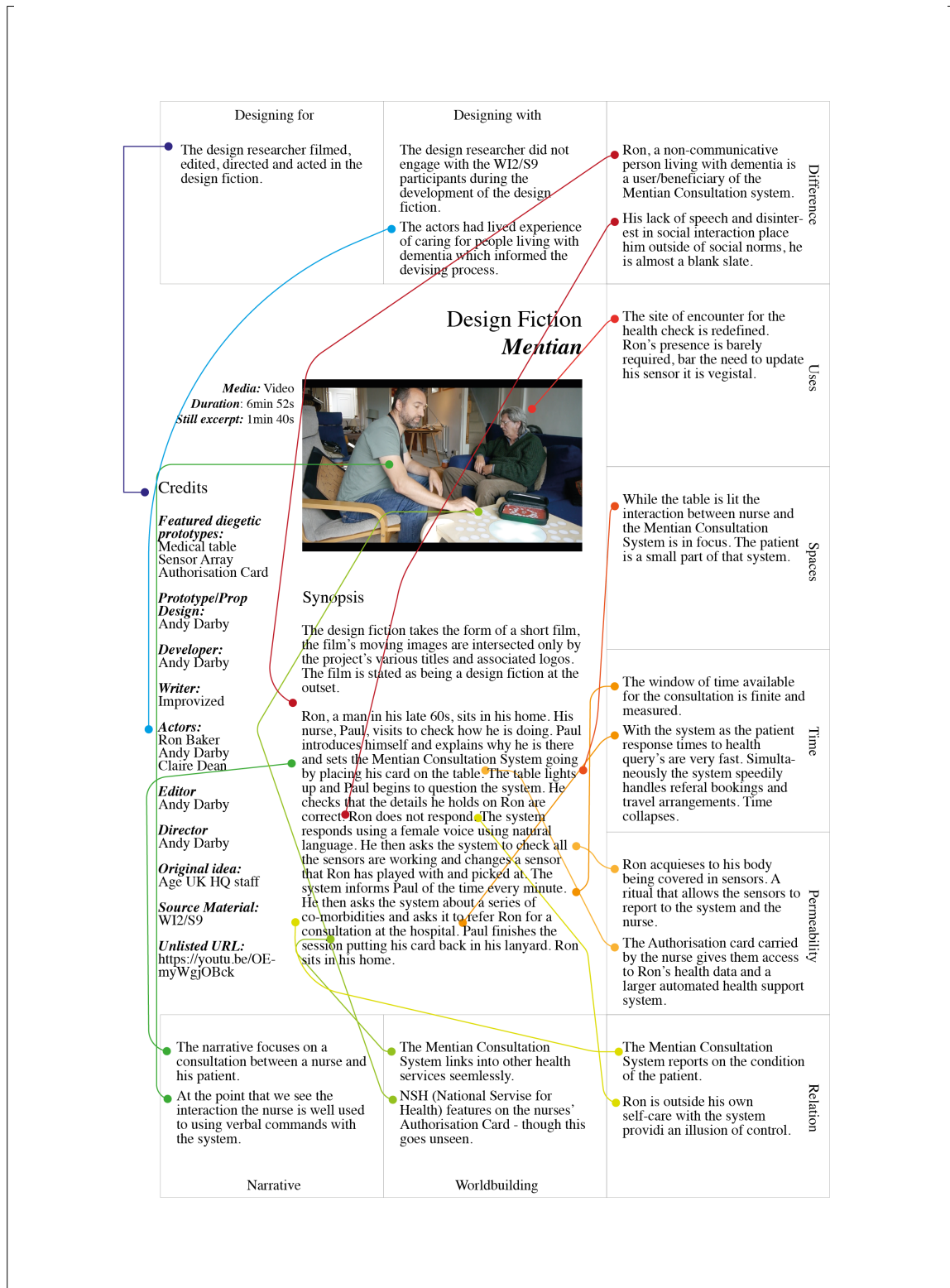


Figure 5.13 Mentian Design Fiction annotations

## 5.5 Summary

The adapted annotated portfolio included design concepts, diegetic prototypes and design fictions.

Design concepts featured; The Smart Things Therapist, see 5.2, Euthanasia Wearable, see 5.3, Skype Cafe, BT Wifi Umbrella & Skype Holochat, see 5.4, Illuminated Pool Table, see 5.5, Easing the burden on informal carers, see 5.6, and The Multi-monitor, see 5.7.

Diegetic prototypes featured; The Smart Object Therapist, see 5.8, Soulaje, see 5.9, and Mentian, see 5.10.

Design fictions featured; The Smart Object Therapist Design Fiction, see 5.11, the Soulaje Design Fiction, see 5.12, and the Mentian Design Fiction, see 5.13.

In the following sections I will draw out the findings in respect of fiction, heterotopia and participation. Considering the fiction through narrative and world building highlights issues of practical construction relating to the design fiction, diegetic prototype and design concepts emanating from participatory speculations. Drawing out the ways in which the principles of heterotopia can be seen to operate within the diegesis gives focus to the normative and non-normative foundations of fictional worlds. Focusing on approaches to participation queries what it means to develop speculations as design concepts, diegetic prototypes and design fictions from normative and non-normative positions.

### 5.5.1 Fiction

#### **Narrative – Holding the thread**

From our conversations in P1/S1 participants were saying, ‘If this is the policy on ageing in place, as older people are our lives disposable to government?’ so they came up with an initial speculation focused on the legalisation of euthanasia - the subtext being ‘they might as well kill us off’. The design concept, see 5.3, and the diegetic prototype, see 5.9, developed the idea focusing on the concept of euthanasia through evermore complex product/user interactions at each stage. The Soulaje design fiction, see 5.12, focused on describing the artefact in order to create a powerful statement about euthanasia. The narrative focus subtly shifted and the reason for the initial speculation was lost in the final design fiction. That said, it was positively received by the participants who found it very impactful and interesting. With this reflection in mind, I attempted to hold The Multi-monitor design concept, see 5.7,

closely as I developed The Mentian diegetic prototypes, see 5.10, and the Mentian design fiction, see 5.13. The intent of the narrative is more constant.

### **Narrative – Foregrounding the social**

The Smart Object Therapist design fiction, see 5.11, and The Mentian design fiction, see 5.13, focus on the interaction between people; the therapist and older person, and the nurse and the person living with dementia. Technology is moved to the background. Similarly, the design concepts Skype Cafe & Skype Holochat, see 5.4, and the Illuminated Pool Table, see 5.5 are explored and told leveraging company roles and user perspectives through conversation and technology is moved to the background. The narratives of use cases and user stories are combined with a focus on subject experience and social value over technological reality and the value proposition is highlighted.

### **World Building – A taxonomy of artefacts**

Under the heading of diegetic prototypes I have included both diegetic prototypes and props as the artefacts of design fictions. It is their ability to tell worlds and the degree that they can do so without additional support that defines them. The Soulaje euthanasia wearable, see B.2, is an example of a diegetic prototype, a 1<sup>st</sup> order artefact, whose function and features tell the larger fictional world. The Soulaje user manual, see B.3, and the protest flyer, see B.11, are 2<sup>nd</sup> order artefacts that expand the world through exposition. Incidentally, they also demonstrate contestation, both sides of the ethical arguments that underpin the 1<sup>st</sup> order artefact. The Mentian Medical Table B.26, and the sensor array, see B.24 are props, rather than a prototypes, they function within the diegesis only by virtue of the actors' engagement with them and tell nothing of the larger fictional world directly. They are 3<sup>rd</sup> order artefacts. The Mentian Authorisation Card is barely a 1<sup>st</sup> order diegetic prototype, see B.25, it has one function to authorise the initiation of the Mentian Medical Table prop. The Mentian information sheet, see B.23, is a 2<sup>nd</sup> order artefact providing the exposition through a physical artefact of the whole Mentian Consultation System. Together different combinations of props or prototypes can be integrated to tell worlds. The fictional world of the Smart Object Therapist is told entirely through 2<sup>nd</sup> order diegetic prototypes, the B.14, the B.13 and the B.15.

### **World Building – Openness to change led to more expansive worlds**

The participants who were resistant to technological intervention produced limited speculations which did not engage with world building, see 5.6. Participants who accepted the possibility of technological interventions produced work sited in their lived real-world contexts with some extensions into plausible versions of the wider real world, see the Illuminated Pool table 5.5 and the Skype Cafe 5.4. And participants who both accepted the possibility of technological interventions and were able to imagine plausible futures based on social and technological change, see 5.7, were able to suggest fuller near-future worlds.

The world building of one participant group, the design researchers and the speculative designer, leveraged change events across the spectrum of political, social, technological and legal factors. Design researchers and speculative designers engaged more purposefully with world building and variously included current real-world systems and plausible systems across design concepts, see 5.2 and 5.3, diegetic prototypes, see 5.8, see 5.9, and 5.10, and design fictions, see 5.11, 5.12, and 5.13.

Across design concepts, diegetic prototypes and design fictions the diegetic prototypes demonstrated the richest descriptions of worlds. This is to be expected as diegetic prototyping is a divergent phase that builds on the initial design concept, prior to the convergent act of producing the design fiction. The diegetic prototyping was also conducted exclusively by professionally interested design researchers and the experienced speculative designer rather than any participant group.

#### **5.5.2 Heterotopia**

While all of the design concepts, diegetic prototypes and design fictions were analysed using the principles of heterotopia, only The Multi-monitor design concept, was developed through diegetic prototypes of the Mentian Consultation System, to the Mentian design fiction with those principles in mind. The aim was not necessarily to generate a strict heterotopia but to use the dimensions of heterotopia to guide the formation of a fictional future world not centred on a normative society, see section 4.1.11, page 87.

Below I consider some of the different aspects of the various heterotopic principles.



## Difference

The majority of the design concepts, and all of the diegetic prototypes and design fictions present the user as little more than lightly developed personas, of these the richest descriptions of lived lives appear in the diegetic prototypes for the Smart Object Therapist. While the design concepts, see 5.4 and 5.5, developed by the two participants from P1/S2, S3, S4 & S5 stand out as being directly rooted in their lived experiences. The participants' presence as a character in the fiction closes the distance between fiction and reality.

## Uses

As noted previously 'uses' refers to functional mutability and the ways a heterotopia changes function over time. The ageing in place and dementia policy focus of the *ProtoPolicy* and *What If?* projects meant that how and where people live their lives naturally became a focus, and the sites of the home, see 5.3 and 5.2, and the residential home, see 5.5 and 5.4 feature strongly. As noted by Foucault, the residential home may already be understood as a heterotopia, however the design concepts begin to make the user's homes into heterotopia as well. The functions of home begin to alter as user's homes are variously reconfigured sites of death 5.3, of health management 5.7, of care 5.2, of religious study 5.4, of play 5.5, and, of abandonment 5.6, in new ways through technological intervention. The nature of the space is changing as a result of the technological intervention, we are witnessing, through these fictions, the beginnings of long term change, of functional mutability. Because functional mutability can only be understood over longer periods of time, the near-futures of design fiction tend to indicate directions of travel rather than demonstrating fully realised changed.

## Spaces

There is no spatial juxtaposition in the Illuminated Pool Table design concept 5.5 or The Skype Cafe Bible study group one, 5.4. The Skype Holochat, see 5.4, spatially juxtaposed the homes of two people as a visitor appeared as a hologram in the residential home.

The Easing the burden on informal carers concept does not discuss a particular site, see 5.6. Similarly, 'Everywhere', or rather no particular space is highlighted for the Multi-monitor concept, see 5.7, however the concept's development, see 5.10, and 5.13, sites the intervention in the home. The technology collapses the consultation room into the home. It also makes personal perceptions of health material as it collects quantifiable expressible data and stores it in the home.

The Smart Things Therapist concept, see 5.2, is developed to collapse a service centre and a therapist's office into the Smart Home, see 5.8 and 5.11. This adds onto other service's that the Smart Home already collapses into the home.

The Euthanasia Wearable design concept, see 5.3, begins as being home-based and expands to be a nationwide initiative, see the 'Soulaje' diegetic prototype, 5.9, as the euthanasia clinic is collapsed into the wearable euthanasia device to allow greater user autonomy. The 'Soulaje' design fiction, see 5.12, presents the freedom of movement offered by the device by showing a tranquil location. Interestingly, that same freedom presented in the diegetic prototype locates the corpse collection point at the grid coordinates of a rather grim London side street. The move from home to anywhere, or private to public, made the design concept more visible and consequently more provocative.

## **Time**

Both the 'Skype Cafe Bible Study group' design concept and the 'Skype Holochat' design concept, see 5.4, offer a transitory connection with the outside world to counter isolation within the residential home, the benefits of which are inferred as being accumulative. Similarly, the 'Illuminated Pool Table' design concept, see 5.5, accumulates fun, competitive experience and friendship to counter the isolation experienced as a result of diminishing sight and the associated loss of opportunities for play. While the 'Easing the burden on informal carers' design concept, see 5.6, accumulates user's data to provide transitory relief from care responsibilities to the beneficiary. In 'The Smart Things Therapist' design concept, see 5.2, a transitory service visit accumulates benefits to the user through the wider technological system of the Smart home that supports extended independent living. This pattern is repeated in 'The Smart Object Therapist' diegetic prototype, see 5.8 and the 'Smart Object Therapist' design fiction, see 5.11. The 'Euthanasia Wearable' design concept, see 5.3, the 'Soulaje' diegetic prototype, see 5.9, and the 'Soulaje' design fiction, see 5.12, both focus on the fleeting nature of that transition between life and death. They each fix the time period of the transition to various lengths allowing different duration's of reflection to accumulate. The 'The Multi-monitor' design concept, see 5.7, accumulates the user's health data to ease the diagnostic process. The 'Mentian' diegetic prototype, see 5.10, gives limited access to the user's health data mirroring a traditional face-to-face medical consultation. While the 'Mentian' design fiction, see 5.13, gives access to the user's data and the health service's systems and collapses time to engage with both instantaneously.

The patterns of time are difficult to read, time as an accumulatory or transitory concept is best understood when viewed alongside 'relation' and its illusory or compensatory effects, as doing so helps focus an understanding of the heterotopic space. Where the impacts of time accrue for users and others within the heterotopia betrays the normative or non-normative perspective of the technological intervention.

### **Permeability**

The richer the description of the diegesis the more likely we are to see examples of gatekeepers and rituals of use in action. The gatekeepers and rituals of use go undescribed in the illuminated Pool Table design concept, see 5.5, though to access it the user must live in the residential home. Like the Skype Cafe Bible study group, see 5.4, the design concept's use becomes a voluntary ritual within the heterotopia of the home. This contrasts to the almost compulsory use of technology within the Easing the burden on informal carers design concept, see 5.6.

In this design concept and the design fiction the Smart Things/Object Therapist is the gatekeeper to the heterotopia of compensation that is the promise of the Smart home, see 5.2 and 5.11. In the diegetic prototype it is clear that the gatekeeper is extensively trained for the role and ensures various rituals are carried out by the user, see 5.8 to assure their supported independence in the heterotopia.

The core ritual in the euthanasia wearable design concept is the death reflection, see 5.3. The diegetic prototypes, see 5.9, expand the associated rituals, with the involvement of a GP and a Smart Object Therapist as gatekeepers to guide a registration process. Additionally, the device has authorisation and documentation processes to provide safeguards, and with an expanded area of use a mortuary collection service. A little of this ritual is seen in the design fiction, see 5.12, though the gatekeepers go unmentioned. The heterotopic space that the Soulaje device creates centres on the death reflection and the quick transition from life to death – the heterotopia here is a threshold from life to death.

The technological system underpinning The Multi-monitor and Mentian Consultation System product service bundles, see 5.7, 5.10, and 5.13, becomes a gatekeeper to the health data locked inside the non-communicative beneficiary, the nominal user or person living with dementia. Through the rituals of presenting their authorisation card, replacing sensors and conducting health checks the normative user accesses an AI-enabled virtual space – the beneficiary's health data and associated medical systems. The user's current and past health

data is stored outside of their body accessible only through the other space that is their digital twin. In this circumstance the digital twin becomes a heterotopia.

### **Relation**

The illusion or compensation that a heterotopia offers its users is best understood in relation to difference and the deviation or crisis that they are undergoing. The power dynamics of the normative and non-normative are revealed in this determination. Who is benefiting and how does the system structure that benefit.

The Skype Cafe Bible reading group and the Skype Holochat, see 5.4, compensate for the participants isolation from people their own age that they are separated from due to their differences from the norm. Similarly, the Illuminated Pool table, see 5.5, compensates for the participants developing blindness and allows play, with its attendant benefits, to continue. This suggests that one approach to compensating for the shared broader problem of isolation within the residential home may involve a series of tailored technological solutions.

In the 'Easing the burden on informal carers' design concept, if the informal carer is taken to be the user then the speculated intervention, see 5.6, provides a compensation for the difficulties of care, however the same speculation viewed from the perspective of a person living with dementia would discern the illusion of care.

In The Smart Things/Object Therapist, see 5.2, 5.8, and 5.11, the Smart Home attempts to assure independent-living, but the complexity of the supportive technology becomes a stumbling block. There is an illusion of compensation that the therapist role confirms as it compensates for the Smart Home's failings.

The original design concept, see 5.3, infers that the euthanasia wearable provides compensation for a lack of autonomy over the user's demise, though it does not state it. The compensation is made clear through the diegetic prototype, see 5.9, and design fiction, see 5.12.

While providing a compensation for the user's non-communicative state the core of The Multi-monitor design concept, see 5.7, the Mentian diegetic prototypes, see 5.10, and design fiction, see 5.13, is on the illusion of continued autonomy that the technological intervention pretends. While the user benefits from medical care, the carer role benefits from a simpler and more efficient diagnostic experience as the technology erases engagement with the person living with dementia.

### 5.5.3 Participation

A brief aside before I continue. Throughout the delivery of the *ProtoPolicy* and *What If?* projects' programme of workshops I reflected on the practice of design workshop facilitation. The development of the visual communication artefacts described in the previous chapter was in part a way for me to address some of the structural commitments I felt necessary for the generation of design fictions *designing with* participants and this chapter sets up a range of insights that inform my response through form.

The slow development of prompts and pivots throughout the workshop programmes and afterwards, began in answer to specific facilitation challenges and moved on as a response to my developing reflections on workshop processes, before coalescing into ever more formalised articulations, that would eventually become one of my thesis contribution, *A scaffold for facilitators*, see 6.5.2. Here, an example may prove useful to indicate how the facilitation processes I conducted tie through observations and insights to the scaffold for facilitators that is proposed later in the thesis.

So, the facilitation of each set of workshops' was supported by my development of various tools. In the *ProtoPolicy* sessions one of the tools used, were simple prompts reading 'What If? ...', as noted in 5.5.3. For the *What If?* project's workshops, working in response to the degree of openness perceived in the *ProtoPolicy*'s 'What If?' prompts that did not appear to support specificity within speculations, I prepared two tools to more directly support participants' creative thinking, which also were intended to introduce an element of chance. One tool focused on the abstract heuristic SCAMPER (Eberle, 2008) and the other on a more concrete design heuristic (Yilmaz et al., 2010). In subsequent workshop sessions, time limitations meant I did not use either as intended. However, making the tools meant I was better prepared to introduce pertinent aspects in informal conversation with participants. And it was here, in WI2/S9, that the SCAMPER heuristic proved itself useful in supporting participants to build more specific proposals. The tool was simple to express, easy for participants to understand, open enough to be used in many situations and applied at the right time it encouraged the specificity that was seen as being previously lacking.

Moving on from my aside, I will briefly concentrate on *designing for* before moving onto matters more focused on *designing with*. However, sometimes I will focus on aspects of *designing for* for the points about *designing with* to become apparent. Apologies, *designing for* and *designing with* can be a messy business.

### **Designing for – privileging research**

The *ProtoPolicy* project and the *What If?* project determined to work with participants using the design fiction method. Participants had minimal input to method selection, facilitation and project outputs, specifically the diegetic prototypes and design fictions that were created.

The research team was privileged by their status as researchers, their numbers relative to participants and their collective intent. The weight given to individual participants voices was minimal in P1/S1 and WI2/S9 as the ranking processes of the codesign facilitation privilege group work. However, in P2/S2, S3, S4 & S5 we were able to follow the lead of individual participants who were supported over a longer period. This means that individual insights may be lost through the faster more formal process.

Understandably, the research team selected design concepts for further development that were most likely to further the research objectives of engaging design fiction for policy debate. The preparation of policy points by members of the research team struck me as problematic. It meant that the point of focus of the participant group's critique was not in their control. This left me with a nagging question, how could the design fiction that emanated from that critique be said to come from the participant group if they had been directed so strongly through the selection of policy points? What controls exist, should exist, or must exist, on the direction of the participants' critique within a participatory design fiction? How explicit are these controls? Would no controls be better? No-one in the groups questioned the fact that someone else had selected the policy points that were then considered or indeed what terms had been used to decide them. Just after the workshop I noted that, 'The use of policy scans alone may be perceived as a lack of trust in participants to understand the complexity of the policy documents rather than a short cut to the relevant matter with them'.

### **Designing with – The character of speculations**

The mixture of affirmative and critical speculations that arose from the P1/S1 workshop process included the passive, the naïve, the hopeful, the fearful, the cynical and the provocative. Framed by the question, 'What if?' they were expressed as blunt statement, possibility statement, list, and product or service story. The majority of the speculations were implicitly, and occasionally explicitly, accessible only when a person passed an age threshold. It should also be noted, that the enforced brevity of the 'What If?' format (writing them onto an A8 card) led to many speculations laying themselves open to multiple interpretations, either in their articulation or their intent.

Most speculations arising from P1/S1 were firmly of an affirmative nature with participants imagining either the re-establishment of services built on older technologies or expansions to available services and technologies across the dimensions of volume, variety or quality. Some of the extrapolations on current products progressed via a hopeful optimism to the utopic while others veered toward the dystopic shaped by a fearful concern, and on one occasion an entirely passive existence seemed to be shaped by a particularly totalitarian tendency.

Two of the three speculations that were more critical were also the most storied, while the third was the tersest of all. While being dismissed by the participant as a cynical jibe, one speculation extrapolated the notion of a private insurance system for healthcare almost to the point of making a *reductio ad absurdum* argument. Critiquing policy shifts that seemed to open space for such insurance systems, they imagined a world in which people placed bets, in an attempt to cover their healthcare costs, on everything from how long they had to live, to whether they would recover from an illness and even if they would manage to be seen by a health professional. In conversation the speculation more obviously layered critique upon critique with issues of GP access, pharmaceutical costs and home-care costs informing the idea. However, in the shorthand used to express it, the subtleties of the participants' thinking were diminished. The other storied speculation layered critiques in an equally complicated but more confused manner, as the ascent of driverless cars gives way to driverless homes that monitor everything, that take people where they need and that drive people eventually to the crematorium. The dark humour of the assessment being no accident.

Such subtlety of thought is less evident in the emotionally blank and terse, yet carefully balanced, speculative statement, 'Voluntary / Euthanasia / was legal', which takes no sides and whose intent proves difficult to understand. The knowledge that in discussion the speculation was understood as an indirect response critiquing how undervalued people felt after having considered the policy points alters ones initial response to the speculations' provocative topic. The speculations arising from P2 were all affirmative in character and were extensions of the life experiences of the participants involved. They did not obviously address policy issues or aim to prompt discussion through provocation. The problems they addressed were current issues, important within their own lives, and the resultant speculations were mainly product concepts. While The illuminated pool table concept could be made with today's technologies, the Skype Cafe bible study group was already possible, and the Skype Holochat concept used a common sci-fi trope borrowing ideas from fantastic technology discussed in the session to underpin the product.

What constitutes speculation in a participatory practice? While criticality is possible, perhaps there is something inherently affirmative about speculation in a participatory practice. Can

affirmative speculations provoke debate? The most critical speculations were almost throw away comments, captured thoughts that were able to stand up to later ranking processes. As facilitator I had to be alert to those throw away comments and encourage participants to write them down as part of the process. While, the more time that was spent on an idea the more rooted in an affirmative approach it became.

### **Designing with – Attitudes to technology within the diegesis**

The majority of design concepts, diegetic prototypes and design fictions featured users who adopted a compliant approach to the technology at hand. The non-compliant aggressive behaviour of the user was identified as a problem for the Smart Object Therapist to resolve at the design concept and diegetic prototype stages, though the related design fiction featured a more compliant confused user. Only the Soulaje diegetic prototype protest flyer articulates a position that is actively hostile to the core product or service offering and this was created by the Speculative Designer. The subversion of technology in use was not on the participants' agendas.

### **Designing with – Attitudes to technology within the workshops**

The majority (P1/S1 and P1/S2, S3, S4 & S5) of the participant's demonstrated a positive yet cautious attitude toward technology as it related to ageing in place and dementia issues. Within the Age UK stakeholder group from WI2/S9 one team was overtly resistant to the application of technology 5.6, while another team were more open to technological innovation in the sector 5.7. Both team's developed a design concept, the latter's was grounded in research and opened opportunities for technological development, while the former's was built on current technology and a societal realignment of values.

### **Designing with – Bigger worlds bigger futures**

The participants that drove the design concepts, The Smart Things Therapist, see 5.2, Euthanasia Wearable, see 5.3, Easing the burden on informal carers, see 5.6, and The Multi-monitor, see 5.7, are positioned within normative society. They are independent older people, stakeholder staff and even professional speculative designers. The design concepts they put forward or develop are less personal and more abstracted, hence they address larger scale issues that are situated well into the future. Their worlds are relatively large and so they are familiar with a wider range of current socio-technological concepts allowing them to



envisage more possibilities from this foundation. They adopt different perspectives and work on behalf of a wide range of people.

### **Designing with – Small worlds small futures**

The scale of the Skype Cafe Bible study group, see 5.4, and the Illuminated Pool Table, see 5.5, concepts are smaller than The Smart Things Therapist, see 5.2, Euthanasia Wearable, see 5.3, Easing the burden on informal carers, see 5.6, and The Multi-monitor, see 5.7 concepts. Design concepts 5.4 and 5.5 have a connection to the participants' personal lived experience rather than larger societal issues. The participants' worlds are small. The things they imagine are scaled accordingly and are either almost within reach or are already technologically possible. The Skype Cafe Bible reading group design concept was essentially a video conference call, such calls were already commonplace at the time of the workshop, but were beyond the participant's experience. As has been said *the future is unevenly distributed*. The participants live in residential housing which is itself a heterotopia accessible to them by virtue of their differences. The participant who developed the Illuminated Pool Table is in the residential housing as a result of age and developing blindness. The participant that developed the Skype Cafe bible reading group design concept finds themselves in a heterotopia for older people as their are limited options that cater for their needs, as a younger person with mobility and learning difficulties. Their imagined futures are small (or obvious), however they could have a large impact on some individuals in similar circumstances.

## **5.6 Summary**

The chapter presented an adapted annotated portfolio covering the design concepts, diegetic prototypes and design fictions generated through the ProtoPolicy and What If? projects. The annotations focused on the nature of the participatory mindset employed in their creation, the various techniques, elements and practices that allowed the diegetic prototypes and design fictions to be created, and a reading of the sites of encounter as heterotopia.



# Chapter 6

## Discussion

### 6.1 Introduction

Design fiction is many things to many people, it is ‘a heterogeneous set of methods, and practices, able to produce a diversity of scholarly and design contributions’ (Baumer et al., 2020). In their paper, ‘Back to the future: 10 years of design fiction’, Lindley and Coulton claim that design fictions are inherently flexible, and that this attribute has caused HCI researchers to mistakenly link its consequent ‘ambiguities to its infancy’ and to reserve judgement on its respectability as a research method. To counter these issues they have called for improved ‘clarity of communication around how it manifests in specific projects, what role it plays, what its products look like, and why it is the suitable tool for a particular task’ (2015). Setting aside suitability, they draw on Sterling’s definition, and suggest three key questions to ask about the design fiction story world in order to clarify descriptions of design fictions in HCI, as follows: ‘What media (or combination thereof) is used to build the story world? What prototypes are introduced? What impact do these prototypes have on the people and their environment?’ (Lindley and Coulton, 2015). In this chapter I will develop questions of suitability and incorporate issues of appropriateness relating to participation.

Lindley and Coulton are careful to argue that they ‘do not want to force design fiction research into conforming to notions of verifiable theory’ (2015). Rather they suggest that in line with Gaver’s approach to research through design ‘we should reflect on the appropriate ways to pursue our research on its own terms’ in the knowledge that ‘convergence may not be the only or best model for progress’ (Gaver, 2012). Acknowledging this point, I recognise that as design fiction matures as a method a number of approaches may coalesce though there is a wide scope for divergence.

In an effort to underline the strength of design fiction's flexibility and to counter any weakness implied by its ambiguity Lindley draws on linguistics to propose 'A pragmatics framework for design fiction' (Lindley, 2015). He sets to one side non-critical 'corporate' design fictions, which he dismisses as 'vapour fictions' and highlights two forms of design fiction; 'intentional' design fictions and 'incidental' design fictions (Lindley, 2015). Lindley claims that these conceptual frames can be used to support 'descriptions of, and applications of, design fiction, whilst not restricting the development and use of the design fiction in a wide variety of research and design projects' (Lindley, 2015).

The literature review section 2.5 demonstrated a developing participatory practice engaging with design fiction. Now, several years on from Lindley's framework there is a need to focus attention on intentional design fictions as they relate to participation.

Within this thesis I split apart theory and practice in order to fit the traditional thesis structure and provide clarity of intent to the reader. However, as I adopt the view that design practice as research is 'theory imbricated within practice' (Nelson, 2013) this chapter is necessarily a muddier and messier enterprise that draws the two together.

Across the following sections I offer a definition of design fiction and consider how design fiction is understood to fiction, looking at ideas of disbelief, dishonesty and disruption. Then I consider how these ideas intersect with participation. Thereafter I consider how design is said to reason and consider what that means for design fiction and for a participatory design fiction practice. Finally, I present a theoretical framework and a scaffold for facilitators that seeks to address some of the issues previously identified.

## **6.2 Towards a working definition**

To understand some of the significant theoretical and practical issues related to adopting a participatory approach to design fiction it is useful to begin with a definition of design fiction, or at least a working understanding, mine is as follows.

### **6.2.1 A Design Fiction definition**

Design fiction is a transdisciplinary design practice (Bleecker, 2009) that engages fiction for its own purposes (Sterling, 2013*b*). Its focus is on nascent technology, on that which is on the cusp of becoming 'buildable, profitable and desirable' (Sterling, 2013*b*). In the context of design research it is 'a technique for exploring the potential value of new design

work' (Blythe, 2014). Whether the design fiction is made with more emphasis towards worldbuilding (Coulton et al., 2017) or to narrative (Blythe and Encinas, 2016) its key strategy is the creation of a fictional world (Dunne and Raby, 2013; Markussen et al., 2020, p. 70) through an act of make-believe (Walton, 1990). When making a design fiction, just as in other areas of design, initial design concepts lead to prototypes, but in this instance they are the diegetic kind (Kirby, 2010). The diegetic prototype is shaped for, and by the parameters of, the fictive universe (Coulton, 2020). The making of a design fiction therefore necessitates the adoption of an iterative process. The fictional and possible worlds (Ryan, 1980) that are created are more than fanciful trivialities or slight imaginings, they are made to exist independently of their creators mind so that they can be called on, retrieved and explored by others (Dunne and Raby, 2013, p. 71).

## 6.3 How participatory design fiction fictions

Let's take a moment to consider the meanings of the word fiction from an ordinary language perspective. The Oxford English Dictionary entry for *fiction, n.* supplies several alternatives. Aside from its concern with literary works and 'the narration of imaginary events and the portraiture of imaginary characters', it is viewed variously as an 'arbitrary invention', a 'pseudo concept', a 'feigning' or 'counterfeiting', a 'deceit', 'dissimulation' or 'pretence'. It is 'opposed to fact' and is concerned with 'inventing imaginary incidents', 'existences', or 'states of things', sometimes 'for the purpose of deception' and sometimes otherwise. And interestingly in English law it has been 'a supposition known to be at variance with fact, but conventionally accepted for some reason of practical convenience'.

### 6.3.1 Disbelief - a test of truths

Sterling presents 'The Design Fiction Slider Bar of Disbelief' (Sterling, 2013a), see 6.1, to aid reflection about the ways in which fact and fiction exist on a continuum. Somewhat provocatively, the slider-bar tool places 'holy relics' and 'unobtainable "objective truth"' at opposing ends of a scale, with numerous varied objects and practices in between, to explore societal acceptance of, or tolerance for, belief and disbelief within various human enterprises. In doing so Sterling exposes the dynamics of the mental action of belief at play in both scientific and religious truths, where one may have confidence or faith respectively. In an attempt to reconcile religious and scientific truths, the physicist Raman describes scientific truths as exopotent 'fruitful' truths and religious truths (or those derived from the

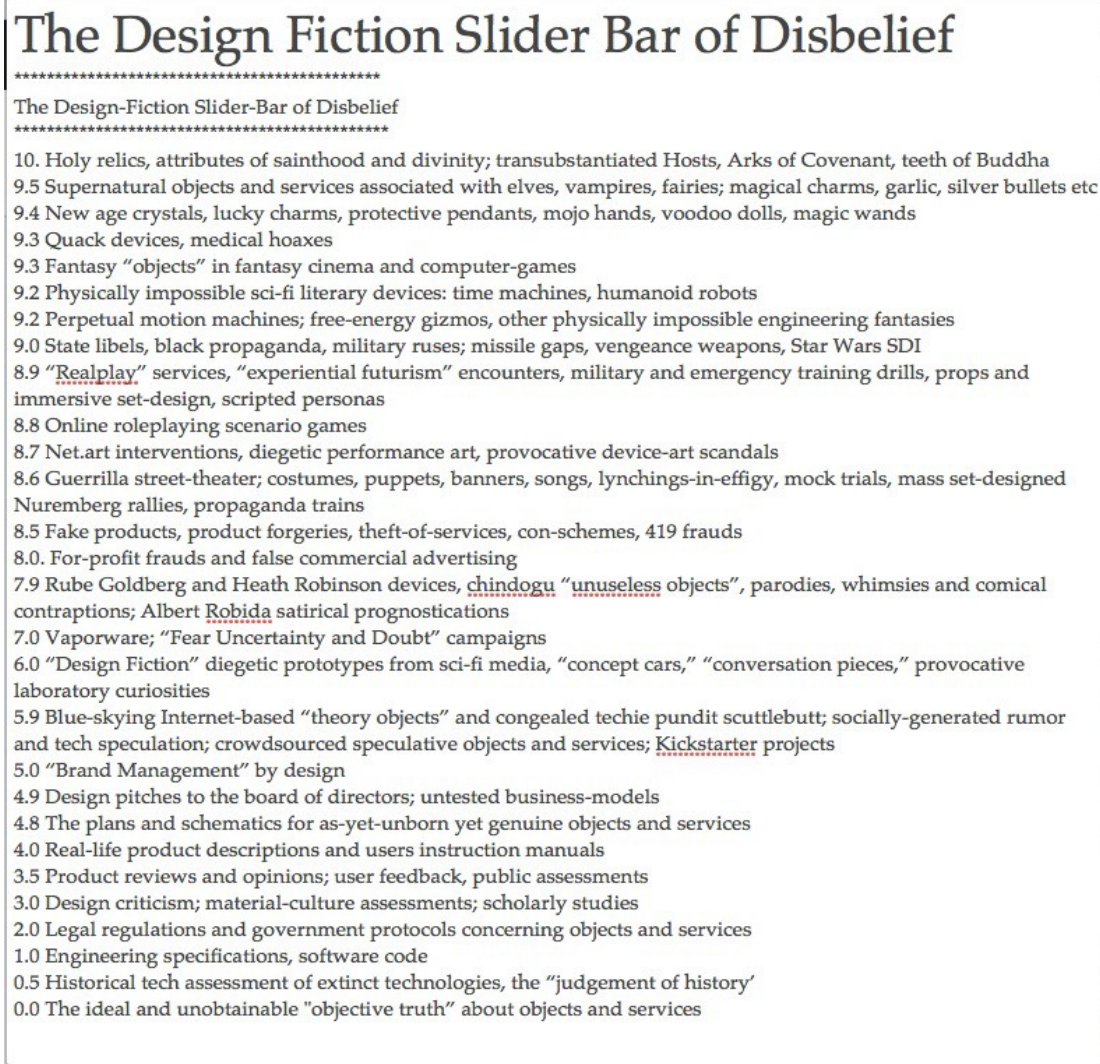


Figure 6.1 Sterling's 'Design Fiction Slider Bar of Disbelief' (Sterling, 2016b)

humanities) as endopotent ‘fulfilling’ truths (Raman, 2001). Sterling does not attempt any such reconciliation, instead his slider-bar demonstrates a determinedly rationalist stance placing the artefacts of religious truth beyond fantasy and objective truth as an unreachable impossibility, while simultaneously acknowledging the fictive aspects of a host of practices that shape human endeavour. The slider-bar represents a sceptical and pragmatic worldview where disbelief is maintained until we are convinced by various practices, objects or services to let go of that part of ourselves. In doing so, we may suspend disbelief momentarily, or more lastingly we might develop a trust or even maintain a confidence in perpetuity. Alternatively, we might even take a leap of faith. However we sacrifice our disbelief, the important thing is that we then enter, however briefly, a state of belief. In this moment some form of truth, be it exopotent or endopotent, or another formation, is accepted. The nature of that truth is reliant on the context of the practices, objects or services described. Ultimately, the slider-bar’s utility lies in its descriptions of a middle ground, where it offers an understanding of design fiction’s use of fiction by virtue of what it is set alongside and between. It is worth noting that whether something is treated as a fiction or a prospective reality is relative to its context. This observation brings up the question of what role a design fiction might play in relation to the real world issues of the participant group and what considerations need to be made by the facilitators.

Belief can be an initial stumbling block to engagement. As design fiction has a technological basis the method forces participants to engage with technological futures even where they resist or reject any role for technology within a particular problem realm. Where participants are resistant to technology having any place in supporting solutions to social issues it undermines their ability to engage in the participatory design fiction process. In order to challenge technological solutionism through participatory design fiction practices the participant must first accept that technology may come to have a role in any given social issue. This becomes problematic for participants as it is difficult to engage in a process if one of the central premises is considered flawed. A participant’s resistance to engaging with any technological approach to a social issue may be justifiable as a design fiction presented as a warning sign could conceivably be adopted as a blueprint for innovation. A belief in the possibility that different technologies may permeate all aspects of life in the future, and a willingness to engage with that possibility are a prerequisite of positive engagement with the design fiction process. This does not mean that participants must want technology to play a role in all aspects of life but that they should engage in order to determine appropriate boundaries in the various domains in which they may have consequential lived experience.

I expected that there might be an unwillingness among participants to engage in the design fiction process because of its fictive nature. That is that there may have been a lack of belief

in fiction as an appropriate conduit for participants ideas. This was not apparent, though that may have been because the wider project worked with politicians in the UK parliament. This association may have conferred a borrowed credibility.

As mentioned previously, in 5.5.3, the nature of speculations, especially those that are fictively framed, makes them worryingly throwaway. Interesting insights, wrapped in acts of speculative playfulness, can slip by easily. Participants may not believe in the fiction strongly enough, as they are unused to valuing their ideas in relation to speculation, to hold onto and develop their ideas. Facilitators need to be aware of this as they plan capture processes within participatory design fiction activities.

These considerations suggest that a suitable rationale for participants' engagement with design fiction projects is needed. While this may be primarily a practical issue of subject matter and relevance it should also be supported by a theoretical base for such work. Such projects will also need to be underpinned by appropriate credible partnerships. And, as noted, their facilitators must plan for suitable capture processes to ensure fleeting speculations are held.

### **6.3.2 Dishonesty - What kind of fiction does design fiction do?**

In the arbitrary 0-10 scale that 'The Design Fiction Slider Bar of Disbelief' uses Design fiction appears at no.6. It is placed alongside 'concept cars, conversation pieces' and 'provocative laboratory curiosities' a class of objects that explore technological possibility rather than commercial reality and that also prompt and provoke discussion around necessity. At no.7 are 'Vaporware' and "'Fear, Uncertainty and Doubt" campaigns' and technological gossip and 'Kickstarter projects' are placed at no.5.9. Both vapourware and fear, uncertainty and doubt campaigns deal in untruths. Vapourwares do not exist, they are often used benignly to test a market's appetite for an idea, while fear, uncertainty and doubt campaigns are a set of techniques used to cast aspersions on ideas less beneficently. As a class they are deceitful stratagem to establish or undermine the desirability of a product or service. Technological gossip, or as Sterling puts it 'congealed techie pundit scuttlebutt', describe commonly asserted probable technological futures. Speculative crowdfunded projects, like those on Kickstarter, often take common assertions a step closer to reality. This class points to a normative understanding of future possibility. It is anticipatory, it is prospective in the manner of much commercial design endeavour. Buffeted by deceit and prospection, design fictions – at least in Sterling's theory – do not offer untruths or normative speculation,



they offer honest fictions at the intersection of the technological and the social, they offer explorations outwith commerce.

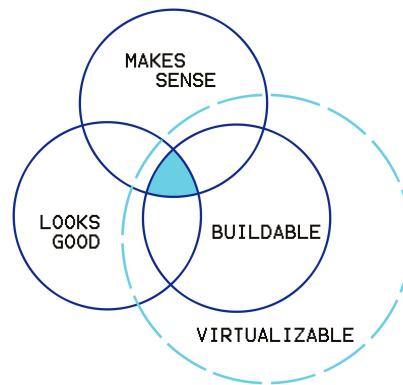


Figure 6.2 Looks good, Makes sense, Buildable and Virtualizable (Sterling, 2016a)

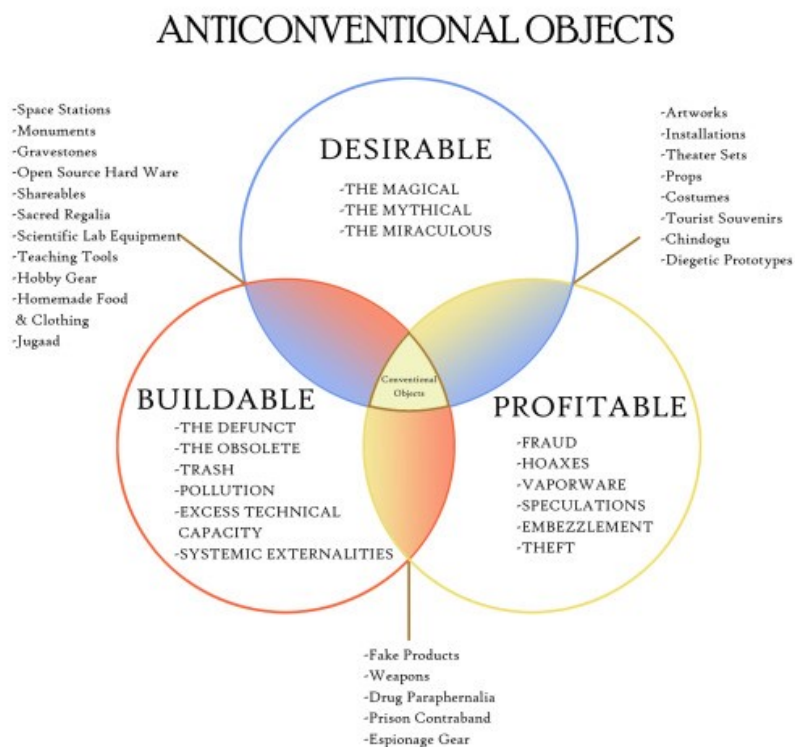


Figure 6.3 Anticonventional Objects (Sterling, 2016a)

This begs the question as to what honesty and truthful non-normative speculation might look like in participatory practice?

The Illuminated Pool Table and the Soulaje design fiction hold different relations with honesty and with truthfulness.

I will begin by discussing truthfulness. Making a design fiction is a process with several stages and who makes the speculation, the design concept, the diegetic prototype and the design fiction has an impact on how the core intention of a fictional statement is made and potentially received. The autobiographical nature of the Illuminated Pool Table design concept confers on it a truthfulness through authenticity. The Soulaje design fiction can be understood as less grounded in authentic experience given the speculative designer had a secondary relationship with the participants and material that inspired the work. This more distant relation resulted in, as noted in 5.5.3, the intent of the initial speculation being lost in the translation through to the diegetic prototype and design fiction. As a comment on euthanasia the fictional statement was complete and effective, and as a work of design fiction it was honestly presented, however it did not arise from an authentic source. Though it was adopted by participants in P3/S6 as being relevant and powerful, over time I increasingly questioned whether it could be considered as being truthful to their original considerations and stated intent.

I introduced the idea of a design fiction being honestly presented in the previous paragraph. By this I mean that it is presented as being a fiction, not as a fact. It is not a hoax. This is interesting because the honesty expected of the products of the design fiction process is perhaps a little messier. Let's return to the Soulaje design fiction, which presents a clearly plausible fictional future, and the Illuminated Pool Table design concept, which is more prospectively, rather than fictively, framed.

The Soulaje design fiction presents a relatively distant near future the technological basis for which has not yet been realised, whereas the Illuminated Pool Table design concept presents an extremely close near future which is already realisable with current technology. The Illuminated Pool Table design concept is not on the cusp of becoming 'buildable, profitable and desirable' (Sterling, 2016b). Its *desirability* is limited by the difference at its centre, oncoming blindness has finite generalisability, and its potential *profitability* is equally constrained. However, its status as an anticonventional object, a design fiction, is compromised most because it is already *buildable* and therefore it appears somewhat unexceptional without provocative bite or substance. It lacks the quality of the unexpected frisson of fiction. This resulted in a premature shutting down of a concept that could have been explored further for what it said about ageing bodies and isolation as experienced in residential homes. Does this represent a failure in the Illuminated Pool Table design concept

as a potential design fiction? Or was there a failure to recognise that participatory design fictions may have alternative attributes that require fiction to be framed differently?

It is not enough to simply present a participatory work of design fiction honestly as a fiction, expectations need to be managed. The presentation may need to be tied to authorial biography or the scale of fictional world may need to be recognised in relation to the participant perspective, see 5.5.3, as part of framing the presentation honestly.

### 6.3.3 Disrupt – the axiomatic moves of make-believe

Early in design fiction's development as a practice, Bleecker 'saw the possibility that serious, hands-on work could employ science fiction as a design framework' (2009). He argued, building on Dourish and Bell's reading of 'ubiquitous computing *alongside* science fiction' (Dourish and Bell, 2014), that design fiction should be 'deliberately blurring the line between fact and fiction' to develop non-technological prototypes that subvert the normative commercial design enterprise. These design fiction prototypes are intended to 'question assumptions about what the future is for, what it contains, and what counts as an advancement "forward" towards a better, more habitable near future world' (Bleecker, 2009). To question assumptions to this degree design fiction must make axiomatic moves. The actual world in which commercial enterprise is foremost is set aside and new worlds are created in which some basic truth from which everything else emanates is reimaged. Essentially this is a game of make-believe and games have rules. Pavel summarises the principles that govern games of make-believe drawing on Evans (1973). Firstly, the basic principles, a set of make-believe truths, are established. Two other principles follow an incorporation principle and a recursive principle. The incorporation principle maintains that any truth not ruled out by the basic principles may be added. While the recursive principle 'governs the construction of new make-believe truths from the basic principles and the incorporated truths' (Pavel, 1986, p. 55). The dual structure of reality and fiction (Pavel, 1986) act in concert, with the imagined world of the design fiction redrawing the actual world just enough to produce a complete image of a changed world.

So, what does it mean to question the normative state of affairs and to disrupt the status quo in such a way? How disruptive is disruption?

Looking at the design concepts from P1/S2, S3, S4 & S5, the Skype Cafe and the Illuminated Pool Table, the statements made through the participants' fictions were built on their circumstances. They lived in the heterotopia of the residential home. The design concepts responded to these individual circumstances as potential compensations. Practices

that already meant something to them were expanded and extended through technological invention, however limited. The focus on enhancing social practice rather than enlarging technological possibility is an interesting one. These are not obviously provocative as is often expected of design fictions, they are well within the realm of possibility. The Skype Cafe design concept was a fictional design only in that it was not available to the participant because they were unable to access such a service for reasons of low bandwidth on site in the residential home, lack of technological capability, and a lack of familiarity with the offering of such a service among the networks they accessed. The Skype Cafe Bible study group needed social, rather than technological development, to support and shape the future that the participant had imagined. Indeed following the coronavirus pandemic this type of online engagement is far more commonly available now, though the dominant technology platforms may have altered. This future has almost certainly arrived in parts of the UK, though I do not know if it has reached the participant yet. At the time I read the participant's design concept as saying 'I want something that is already available' and was somewhat dismissive of it. However, it is an extraordinarily powerful comment on their experience of isolation within the residential home. The design concept does not challenge assumptions about futures, it challenges assumptions about the present and acts as a reminder that the future really is unevenly distributed. Action, not anticipatory action, might arise directly from this kind of fiction.

The Soulaje Euthanasia Wearable had disruption at its centre, embedded in the original speculation as a shift in legality. Within the participant group it was expressed as a statement of their disgust – carrying the sentiment, 'we might as well be dead if this is how they view us' – at their peers treatment in policy. Though it was not strongly tied to participant intentions to discuss euthanasia itself, it was later adopted as being relevant and important because the speculative designer created something that was challenging. Additionally, it was pertinent to contemporary discussion as the topic was under parliamentary debate and scrutiny in the media. In the Soulaje Euthanasia Wearable, contestation between the design fiction's present (legal) and its past (not legal) and between differing viewpoints (accepted/unaccepted) held in future society was clear from the design concept forwards. A particularly useful tactic in pushing the contestation and centring the disruption in the Soulaje design fiction is visibility. A taboo topic, death, is centred and is shifted from private to public spaces. In fact the heterotopia of the Swiss euthanasia clinic is moved from being invisible and private to visible, public and, importantly, everyday as a wearable device.

How might facilitators and design researchers be alive to insights gained from products of the design fiction process that are not disruptive of the future, but rather of the present? What support might projects offer participants? How might exploration of contestation be built

into the generative process to assure more disruptive futures are developed? Also, as part of participatory design fiction processes, facilitators, designers and design researchers must ask themselves what responsibilities they hold with regard to supporting participant intentions on the one hand and to making disruptive speculations on the other?

## 6.4 How participatory design fiction reasons

So why do we need to call on design fictions' possible worlds? What kind of reasoning does design fiction make possible in design research? To consider that it is useful to think about what design thinking is said to offer. Dorst calls on formal logic to argue that designers engage in a number of reasoning strategies and that 'design is not one way of thinking: it is a mix of different kinds of thinking' (Dorst, 2011). He notes that in the sciences inductive reasoning, relating to discovery, and deductive reasoning, relating to justification, are used to establish fact. In design, however, the object is not to establish fact but value. So, while in the sciences 'what' plus 'how' leads to a 'result' in design "what" plus "how" leads to "value" (Dorst, 2011). So, in design deduction and induction are commonly used for analysis, while two types of abduction, which he refers to as abduction-1 and abduction-2, are employed for 'closed' problem-solving (Abduction-1) and 'open' problem-solving (Abduction-2). In Abduction-1 the value that is aspired to is known, as is the how, the working principle, that will be used to help attain it. However, the thing to be made, the object, service or system, the what, is not known. In Abduction-2 the end value that is aspired to is known, and both the what and the how are not. Designers making use of type-2 abductive reasoning resolve the problem of not knowing either the 'what' or the 'how' by developing frames, 'a "frame" is the general implication that by applying a certain working principle we will create a specific value' (Dorst, 2011). Experimentation with frames, allows them to move on to type-1 abductive reasoning to help them complete the equation 'what' + 'how' => 'value'. Dorst argues that themes and frames are strategies commonly used by experienced designers to bridge between the 'value' and the 'how' in order to then establish the 'what'. They can then evaluate whether the 'what', the 'how' align to create the 'value' that was originally aspired.

Underpinning design fiction is the recognition that when abductive reasoning is called for, and particularly when the 'what' and the 'how' are unknown, the aspired 'value' being sought after is liable to hold more than a narrow range of intended consequences. In fact unintended and unanticipated consequences are more than likely to be present. With this in mind design fiction problematizes the shift from working principle to end value, making use of a fictional

‘what’ to explore the socio-technological consequences arising from myriad combinations of different working principles and aspired values. It does this by, on the one hand, posing *What if?* statements that query common working principles and, on the other hand, by developing more uncommon ones to challenge the normative imaginaries that underpin the development of socio-technological systems. Design fiction reasoning links the beginning and end of the abductive reasoning equation, ‘what’ + ‘how’ => ‘value’. It asks of the ‘what’ the nature of the aspired ‘value’ that the ‘how’ inspires. In this way it operates in line with Dorst’s contention that only ‘completed equations can be tested on their merit’ (Dorst, 2011). Participatory design fiction practices expand the base from which those myriad combinations of different working principles and aspired values are drawn and assessed, placing difference of experience as well as perspective to the fore in the consideration of value.

## 6.5 Contributions

The thesis offers two contributions to knowledge. The first is a theoretical framework to underpin a participatory approach to the design fiction method. The second is a scaffold to aid design facilitators in their support of workshop participants.

### 6.5.1 A theoretical framework for Speculative Heterotopia

The theoretical framework presented here may be best understood through the term ‘speculative heterotopia’. The term comprises two words, the first ‘speculative’ denotes an engagement with futures based on conjecture through fictional worlds and possibility, and the second ‘heterotopia’ draws focus to the creation of a non-normative space in relation to normative society. ‘Speculative heterotopia’ may be used to support the creation of fictional worlds in design fictions using the principles of heterotopia as cognitive heuristics.

In developing this framing of theory in support of participatory approaches to design fiction I draw on Sterling’s Design Fiction Theory, Luhmann’s Social Theory of Time, Feenberg’s Critical Theory of Technology and the Futures Cones, a model common to design fiction practice, see 2.3.2, and put them into conversation with Foucault’s concept of heterotopia.

Futures are deeply contested. The discourses of potentiality expressed by various visions and visualizations that enact possible futures, namely *present futures*, act in tension with the political, economic, social and technological opportunities of the moment, namely *future presents*, and form an *open future*, see 4.3.2. At any given time tradition and modernity

are under strain (Baudrillard, 1987, p .63) with the forces of *defuturization* and *futurization* (Luhmann, 1976, p .141) constantly at play. Possibility is negotiated within the frames of our modernities, or understood another way our ‘social imaginaries’ (Taylor, 2002, p. 91). Many futures may occur, though some futures are more likely to occur than others and some are more desirable than others. Viewpoint is crucial. Desirability is bound to partiality and informed by many individual pasts and presents and their relation with the future, see 4.1.7.

Technological development is a significant driving force in the formation of futures. It is not a neutral process, it is an ambivalent one. Social values do not simply arise out of the use of technologies, they are purposely imbricated in technologies through design, as such technological futures are political and contestable, see 4.3.1.

As a method design fiction can be understood as straddling *present futures*, with their ‘Utopian approach’, and *future presents* which are ‘technologically constituted’ (Adam, 2010) and ‘more tightly bound to the “present present”’ (Szerszynski, 2016, p .10). Design fictions share utopias aim, the ‘education of desire’ (Levitas, 2013), but not the imprecision of their focus. ‘Utopias are sites with no real place’ (Foucault, 1984), their concern is societal. They are focused on describing human flourishing as a result of economic, social and political ways of organising the world. The world considered at this scale is more open to utopian failures of imagination that lead to a reductionist binary constituted of optimism and despair and the production of commonplace dystopia and utopia, see 2.4.7. Representations of ‘society’, when treated as a single entity, tend towards erasing difference. The variations and complexities of people and place and the systems they use to formalise practices within their world are flattened.

Design fictions have a tighter technological focus. Design fictions draw focus close, onto that which is on the cusp of becoming ‘buildable, profitable and desirable’ (Sterling, 2016b), onto the technologically constituted near future. Design fictions call on Walton’s *The Theory of Make-believe* (1990) and Ryan’s *Principle of Minimal Departure* (1991) to create fictional worlds that are close to reality yet changed by an exploratory, and often technological, intervention (Dunne and Raby, 2013). In these worlds certain aspects of wider society are stated while others are left to be inferred.

While ‘utopias are fundamentally unreal spaces’ (Foucault, 1984) heterotopia are real, they are actually localisable. It is this quality of heterotopia that offers speculative acts support in building specificity and particularity in the fictional world. The principles of heterotopia, articulated by Foucault, provide a complex and rich set of tools for the development, and analysis, of design fictions. Importantly for participatory practices they address how sites of encounter with technology may be shaped by the nature of the user’s difference to

normative society. This ‘Heterotopian approach’ to *present futures* encourages a more grounded connection with *future presents* through the development of design fictions that resist reductionist binaries and centre marginalised perspectives.

Adopting *speculative heterotopia* as a theoretical frame to design fiction closes the distance between technologically constituted and more utopian and dystopian futures. It compels one to engage with the non-normative simultaneously with the normative, making for a richer discussion of human social complexity and technological intervention. While it is not necessarily incumbent on researchers to engage with the idea of *speculative heterotopia* in a participatory mode it provides a strong foundation for such engagement. In considering the technological intervention in use *speculative heterotopia* foregrounds the qualities of the site of encounter as formed by that interaction. It makes explicit the relationship between spaces and time, people and technology, and the systems of power and control in action that they evoke.

The principles of heterotopia are presented below alongside questions to assist in their use in support of speculative heterotopia for design fictions.

1. **Difference** – This principle is considered in two ways, via *crisis* and *deviation*. It invites reflection on normative and non-normative positions and perspectives, and how they may shape each other.

The key question here is, *How does the nature of an individual’s or groups’ difference actively shape normative and non-normative experience in this fictional world?*

2. **Functional mutability** – This principle encourages attention to *changes of use* of a site of encounter or heterotopic space given over to particular purposes, especially those changes made over longer time periods.

*What has it been used for and how is it used differently now?*

3. **Spatial juxtaposition** – This principle considers how the site of encounter contains multiple spaces within the heterotopia.

*What kinds of space are drawn together? How are they experienced? How are those spaces layered, composed and juxtaposed to create new configurations and meaning? What, if any, translocation has occurred?*

4. **Time** – This principle is considered in two ways, via the *transitory* and *accumulatory* qualities of time.

While considering those qualities the key questions are, *Who or what experiences time within the heterotopia and how? How is time without the heterotopia experienced differently?*



5. **Permeability** - This principle gives consideration to the *gatekeepers* who control the relation between the world at large and the heterotopia and the *rituals* that maintain that relation.

*Who are the gatekeepers to the heterotopia? Is the gate-keeping mechanism technological or social? What are the rituals that allow access to and from the heterotopic space? What permissions are required to gain/retain access to the heterotopia? How does exclusion operate?*

6. **Relation** – This principle is considered in two ways, does the non-normative heterotopic space operate as an *illusion* or a *compensation* to the normative world at large? It invites reflection on the location of value within a system.

*How does the heterotopia support the non-normative user by compensating for the normative world's treatment of them? How does the heterotopia support the non-normative user by providing an illusory relief from the normative world?*

The theoretical framework described supports the scaffold for facilitators that follows. It does so by highlighting the relational nature of normative and non-normative lives, and recognising the plurality of experience that forms the actual world and may also inform possible future worlds.

### 6.5.2 A scaffold for facilitators

The following prompts are intended to support facilitators in preparing participatory approaches to design fiction practice. They are not intended as a direct tool for participants to use, unless participants have plentiful opportunity to engage with the material and extensive guidance. I have operated under the assumption that the social implications of technological possibility will be of particular interest to the participants or stakeholders involved and that to identify useful prompts and pivots to practically scaffold a participatory approach to the generation of design fictions in a workshop setting would therefore prove beneficial.

The scaffold presents a series of prompts and pivots divided in to six stages; experience, anticipate, imagine, build, frame and share. Though the stages are enumerated and a linear approach is therefore implied the stages, and the prompts in general, should be understood as informing a continued conversation throughout the participatory engagement. I would recommend adopting a linear approach for a first read through and then adopting a more chaotic approach, akin to shuffling a deck of cards, looking for more unexpected connections between different prompts and sequences. The idea being that facilitators

familiarise themselves with the prompts to enable them to link some of the ideas together as they design their unique approach befitting the particular group they are working with.

Facilitators, stakeholders and participants/potential participants should consider the implications of top-down and bottom-up approaches to the establishment of the topic area as part of the initial study design.

1. **Stories – How is it going?** The *ours*, *theirs* and *the space between*

Linking to the principle of *Difference*, these prompts seek to explore how the group sees its own experience, how it speaks of its singular qualities, and, how it may understand itself as being *othered* by normative society.

- **‘Our’ Stories** – The *us* in ‘us and them’

Within the topic area, share participant stories of lived experience and reported experience relevant to forming the design space and identify the shared issues and common threads linking them?

- **‘Their’ Stories** – The *them* in ‘us and them’

Relate stories describing real examples and imagined perspectives from, and of, normative society and identify the significant themes that link the real examples and imagined perspectives of the ‘them’?

- **Contestation** – The space between ‘us and them’

Define the positions taken in ‘our’ stories and ‘their’ stories.

2. **Probable Futures – How is it going to go?** Define the dominant futures paradigms.

Linking to the principle of *Difference* these prompts seek to explore and establish mainstream views of the future in relation to a topic area and the technological drivers of change that may reshape it. Exploring how new designs support the ordering of society, and how emergent trends might offer new orderings to challenging the status quo also set the scene for participants own speculation.

- **Designs** – Product, Service, or Product and Service.

Consider any designs or design concepts relevant to the topic area outlining the products, services or product service bundles. Then, importantly, assess the ‘need, viability and benevolence’ (Kirby, 2010) of these designs and developing design concepts.

- **Trends** – Establish current trends that relate to the topic area and specifically to the range of technologies that might relate to the topic area. Which trends are

tailing off, which are constant and which on the rise? Who among the project team and participants is responsible for identifying the trends? How do you ensure that the technological trends are understandable and understood?

- **Changing world** – Political, Economics, Social, Technological, Legal, and Environmental (PESTLE).

Drawing on the Taylor's version of the futures cones (1990) use the PESTLE headings to help explore the underlying systems that support the designs.

3. **Supporting speculations – How could it go differently?** This set of prompts invite the facilitator to consider how they will work with participants to orientate, gather, develop, and focus speculations. The key here should be that the speculations come from the participants unique perspective, again linking to the principle of *Difference*.

- **Approach** – Affirmative and Critical

How do participants want to approach speculation about potential futures? Do they want to work affirmatively within the confines of the status quo or do they want to produce work that is critical of it (Dunne and Raby, 2013) or are there less binary possibilities (Pierce, 2021)? How might participants be enabled in challenging the assumptions and preconceptions of the products and services that shape their lives?

- **Speculation** – More and Or

Develop the speculation. Question the trends through the speculation. The approaches to speculation that I have witnessed and conducted throughout this study relied on leaning into probable futures and diverging from them to various degrees. Recently, Pierce described the speculative strategies I term 'More' and 'Or', as Accelerational and Divergent/Deviational (Pierce, 2021) and highlighted other useful tendencies within speculation, such as Oppositional, Counterfactual and Analogical. How are interesting speculations identified and prioritised?

- **SCAMPER** – Substitute, Combine, Adapt, Modify/Magnify/Minify, Put to other uses, Elaborate/Eliminate, and Reverse/Rearrange.

Use SCAMPER, a standard brainstorming extension-building activity, to support imaginative speculation (Eberle, 2008). Support participant explorations with timely interjections using individual SCAMPER prompts to invite them to extend their creative thinking.

- **Approach** – Fantastic and Mundane

How far from the everyday should the design concept stray? While design fictions

are grounded in current science and orientated toward the mundane, see 4.1.8, there remains plenty of scope for fantastic approaches in terms of aesthetics, chronologies. It is useful to think about how oscillating between the fantastic and mundane opens and closes possibilities at key points within deliberations.

4. **Building the fictional world – How might that look?** The ‘who’, ‘what’ (technology/design), and ‘where’ come together at a specific ‘when’ to form a site of encounter – a speculative heterotopia – set in relation to a wider world. The ‘why’ is informed by the participants, who they are and how they see the world. While considering 4a, 4b, 4c, 4d and 4e, take the six heterotopic principles, see 6.5.1, as inspiration for potential prompts that help participants consider how the site of encounter with a technology may be understood as a heterotopia?

- **Difference** – Crisis/Deviant,
  - **Functional mutability** – Layering use across time
  - **Spatial juxtaposition** – Layering and juxtaposing space,
  - **Time** – Transitory/Accumulatory,
  - **Permeability** – Compulsion/Submission,
  - **Relation** – Illusory/Compensatory.
- (a) **What will be encountered?** – Linking to the principle of *Functional mutability* these prompts seek to explore and establish potential design concepts by beginning to develop speculations into a physical or at least ‘visualizable’ design.
- **Design concepts** – Product, Service, or Product and Service.  
Sketch design concepts relevant to the topic area outlining them as products, services or product service bundles. What do the design concepts say about the world?
  - **User Story** – Context, Who, Problem, Solution, Outcome, and Concept.  
Establish the value proposition of the design concept in order to clarify the social value, see 5.5.1, try developing the statement ‘The product helps (X) do (Y) by doing (Z)’. What do participants feel about the nature of the help provided?
  - **Contestation** – Define the positions taken between the story told by the design concepts or user stories and the probable futures.

- (b) **Who encounters what?** – Linking to the principle of *Difference* these prompts seek to explore and establish who power flows toward and how that power is applied, responded to and felt.
- **Agency** – Users and Non-users  
Who is part of the speculative world? What agency do they have? Are they visible or hidden? Drawing on the brief consideration of agency in the Design Fiction Volvelle, see 4.2.3, it is important to consider the wider system operates and how invisible hands may operate within it.
  - **Attitudes** – Compliant, Subversive, Malicious, and Criminal.  
What is the user’s attitude toward the design concept? Also consider non-users? Drawing on the findings regarding participants’ relation with technologies as expressed in this study’s design fiction works, see 5.5.3, as well as reflection on Superflux’s *Uninvited Guests*, which builds its narrative through escalating subversion, (Jain et al., 2015) I put forward a wider range of attitudes to help drive our speculative imaginations.
  - **Transformation** – What, if any, change arises for the user from the product or service?
- (c) **Where is the site of encounter?** – Linking to the principles of *Functional mutability* and *Spatial juxtaposition* these prompts seek to explore potential sites of encounter and establish how a design’s use in a particular location may better support the speculation as a rhetorical statement.
- **Space** – Familiar and unfamiliar  
Where is an expected site of encounter for the design concept? Would changing the site of encounter make a difference to the way the design concept is perceived?
  - **Visibility** – Public and Private  
Where do we encounter the offer and how does the site of encounters’ visibility change the nature of the provocation, see 5.5.2.
- (d) **When is the time of encounter?** – Linking loosely to the principle of *Time* these prompts seek to explore how best to position the speculation chronologically to support both the suspension of disbelief and its rhetorical power. However, it is also worth returning to the questions relating to time in 6.5.1 to consider how time is experienced by different entities.
- **Future** – Near and Far  
When do we encounter the design concept in chronological terms? How far

along the Performance S curve is the class of product now? How long might it realistically take to actually develop such an innovation? When is the nearest believable point at which we may encounter such a design concept?

- **Adoption** – Innovator (2.5%), Early Adopter (13.5%), Early Majority (34%), Late Majority (34%), and Laggards (16%).

At what point in the adoption curve (Rogers, 1995) do we witness the product, service or bundle in use?

- (e) **What gets made?** – Drawing on all the previous prompts and pivots, make evaluate, and iterate artefacts that exist within the diegesis and tell the imagined world. As part of those iterations revisit the principles, in section 6.5.1, to refine the speculative heterotopia.

- **Diegetic Prototype** – Prototype and Prop

How much needs to be built to show and tell the world? Based on the design concept, and drawing on insights from 5.5.1, sketch/outline/make a 1<sup>st</sup> Order Artefact that tells of itself and the fictional world with minimal, or no, additional support.

- **Functions and Features** – Detail the functions and features of the Diegetic Prototype.

How do particular functions and features demonstrate aspects of the wider socio-technological system? What other systems do they interconnect with?

- **Positions** – *Articulating support*, what else needs to be designed to show and tell the world arising from the thing? Based on the diegetic prototype, and drawing on insights from 5.5.1, make a 2<sup>nd</sup> Order Artefact that offers exposition to further explain the diegetic prototype and explore the wider fictional world. *Articulating opposition*, what else needs to be designed to show and tell the world arising from the thing? Based on the diegetic prototype, and drawing on insights from 5.5.1, make a 2<sup>nd</sup> Order Artefact that counters the values displayed by the diegetic prototype and shows contestation within the wider fictional world. The focus here is on opposition and is demonstrated necessarily through additional exposition. Examples of 2<sup>nd</sup> Order Artefacts might be; Paperwork, Article, Catalogue, Instructions, User Manual, Newspaper, Magazine, Collateral, Direct mail, Point-of-Sale, Out-of-Home advertising, Trade Show, web sites, documentary, advert, interviews, etc. *Revelations*, what do you want to be revealed by the 2<sup>nd</sup> Order Artefacts? How have insights regarding the underlying systems been uncovered?

5. **Targeting the design fiction – Is what we say clear? And how best to share it?** A design fiction is more than a diegetic prototype, or a collection of diegetic prototypes. It is a statement about a changed world intended to elicit a response. The following prompts invite reflection as to the effectiveness of the statement and how it might be shared.

- **Unintended Consequences – Beneficial and Harmful**

What are the potential consequences of the design concept being in the world? How should these consequences be treated in the design fiction? The invitation to contemplate consequences of potential lines of innovation is at the heart of design fiction practice, see 6.4, however serious consideration needs to be given to what statement is being made by the participants by virtue of this treatment.

- **Social Value – Broader Consequence.**

In the design fiction one technological possibility is held up for scrutiny, not for technological feasibility but social value, see 4.3.1. Technology's ambivalence is opened to question by participants or stakeholders only as they address questions such as; Who gains and how from the system? Who loses at the systemic level? What are the wider risks and rewards for society? How might they be exposed in the design fiction?

- **Differential – Change state and Status Quo.**

Are the positions well defined and is the separation between them sufficient? How much ambiguity is appropriate?

- **Medium – Text, Audio, Still Image, and Moving Image.**

Which medium will carry the message most clearly to the intended audience? Are there any issues regarding inclusive communication? Does the finished product need to be perfect? Imperfectly produced work is entirely acceptable in many settings it may even be more appropriate and distinctly preferable in relation to the external optics of stakeholder organisations committing time and resource to speculative endeavours.

- **Usage Realm – Advertising, Promotional / PR, Corporate, Editorial, Academic, and Artistic.**

Which focus will speak to the intended audience? Drawing on the development of academic abstracts and conferences as specific forms of design fiction that speak to a particular audience, see 2.4.5.

6. **Conversation and reflection – Who are we talking with and why? And what comes from that?** The following prompts are intended to help the facilitator reflect on the development of the study design and its purpose as a participatory act.

- **Intention** – Action and Reflection.

What is the anticipated outcome of engaging with the audience? Consider this query for the participant grouping, researchers and any other stakeholders.

- **Target Audience** – Active and Passive.

Who do you need to engage and what impact on the discourse do you seek? This consideration opens the issue of instrumentalism, see 4.2.5, and should tie back neatly to the project's initial aims.

- **Discursive Space** – Open and Closed

Does it need to be publicly accessible or might it be more appropriate being private to a particular grouping? What kind of discussion space is needed? The process of making the design fiction might itself be the significant action, or it might be useful to bring a specific group into conversation through sharing the design fiction. Not everything needs to be a public discussion, but a determination should be made as to the degree of closedness or openness appropriate to the project. If working within the context of academia, it may also be useful to call on Tharp and Tharp's model, see 4.2.5, to give consideration to the project's relation to disciplinary discourse.

- **The Gap** – Fiction and Reality.

What bridges may need to be built and what walls erected?

This query orientates the design fiction towards anticipatory actions, see 2.2.4, and questions what might be necessary to move towards an imagined future or to protect oneself from it. The wider question that emanates from this query relates to how the design fiction might be misread as a desirable future when presented as a warning?

## 6.6 Summary

The discussion chapter offered a definition of design fiction and considered how three aspects of design fiction theory; ideas of disbelief, dishonesty and disruption relate to a participatory approach to the method. Thereafter I briefly looked at how design is said to reason and I considered what that means for both design fiction and a participatory design fiction practice.



Finally, I presented two contributions to knowledge, a theoretical framework and a scaffold for facilitators engaging in participatory approaches to design fiction.

Next, the thesis concludes by offering the briefest of overviews of the rationale and methodological approach to the study before highlighting the contributions made to knowledge and discussing issues in use for design researchers and facilitators. Finally I touch on subsequent and future work before closing with a consideration of the value of the research.



# Chapter 7

## Conclusion

### 7.1 Overview

In this section I set the context for the work and summarise how it was undertaken.

Use of the design fiction method has grown among designers, researchers and artists in the design community. Over the last ten years government, industry and academia have experimented with its use in various explorations of potential futures. The method takes fiction as a strategy to use design for the purposes of rhetoric, innovation and research. The nexus between design and HCI has been a particular point of interest. Participatory Design has, until recently, demonstrated minimal interest in adopting speculative practices. The thesis explores design fiction from an egalitarian impulse in support of participatory approaches to the method.

RtD was my approach to the research undertaking. I incrementally built theory and practice through the iterative design of artefacts and direct engagement with participants in participatory design fiction workshops. Some artefacts were used to help me address and reflect on theory, some were created to support participant engagement and others were participatory design fiction outputs. Constant reflection in and on the practice and the artefacts responding to that practice allowed the development of a theoretical framework and scaffold for facilitators of participatory design fiction. Two methods bricolage and an adapted annotated portfolio were used. Bricolage allowed me to consider theory, while the adapted annotated portfolio allowed me to think about the results of practice and the practice itself. The bricolage was an exploration of theory developed in conversation with practice. The Portolan chart and the miscellany of artefacts that made up the bricolage were a physical manifestation of

theoretical possibilities. They held multiple pathways through the theoretical space lightly, not fixing a single pathway too soon in the process. The adapted annotated portfolio gathered together a thematic exploration of design fictions, diegetic prototypes and design concepts produced through participatory processes in external projects. The actions and interactions of participation as an approach, design fiction as a method and heterotopia as a concept for speculative analysis, and potentially generation, were explored.

## 7.2 Findings

I restate the study's research questions below:

1. Can a participatory approach be taken to the generation of design fictions?
2. If so, what steps must be taken to support a participatory approach to the generation of design fictions?
3. And, what underpinnings are necessary for a participatory approach to design fiction?

I summarise the research findings in answer to the first research question.

The research process has revealed design fiction practice to be a complicated proposition for non-designers. As a method design fiction requires its proponents to possess a high level of awareness of the state of technological innovation and a willingness to engage speculatively with the role of technology in all aspects of society. Yet participants may have limited knowledge of contemporary and upcoming technological offerings and a resistance to technology having a role in some social issues. These issues are problematic for participatory engagements.

Additionally, non-designers can find it difficult to give speculative notions generated in workshops their due importance and as a result ignore or dismiss potentially rich ideas creating a challenge for facilitators in terms of capturing and developing nascent speculative statements into design fictions. In a similar vein, I note that borrowed credibility through appropriate project partnerships may be required to quiet potential participant unease around fiction as an inappropriate conduit for participant insights.

There are significant facilitation challenges to be navigated as part of the generative process as speculations are developed into design concepts and diegetic prototypes to become design fictions. Throughout the generative stage facilitators and design researchers need to be alive to insights gained from the products of the design fiction process, those that are disruptive of

the future and also those that are disruptive of the present. Subsequently, any presentation may need to be tied to the initial intent or authorial biography. Also the scale of the fictional world may need to be recognised in relation to the participant perspective as part of framing the presentation for discursive spaces. Participants should be involved in these considerations.

It is essential to build an exploration of contestation into the generative process to assure more disruptive and challenging futures are developed. As part of that process, facilitators, designers and design researchers must ask themselves what responsibilities they hold with regard to supporting participant intentions, making disruptive speculations, and safeguarding participants. The management of expectation among participants, stakeholders and audiences across the generative stage and later presentations is needed to assure the work is created as, and presented as, an honest fiction to promote discussion.

The contributions, below, are presented in answer to the second and third research questions.

## 7.3 Contributions

The thesis presents two contributions, a theoretical framework and a scaffold for design facilitators.

### 7.3.1 Theoretical framework

Developed in response to the question – *What underpinnings are necessary for a participatory approach to design fiction?* – the theoretical framework attempts to bridge designs’ speculative and participatory projects.

*Speculative heterotopia* draws on Sterling’s Design Fiction Theory, Luhmann’s Social Theory of Time, Feenberg’s Critical Theory of Technology, and the Futures Cones, a model common to design fiction practice, see 2.3.2, and places them in conversation with Foucault’s concept of heterotopia.

The theoretical framework supports three applications.

- Firstly, it provides a rationale for the analysis of design fictions through the concept of heterotopia.
- Secondly, it provides a theoretical foundation for heterotopia to be used as a frame for speculation.

- Thirdly, it provides theoretical support for participatory approaches to design fiction.

*Speculative heterotopia* is useful for design researchers as a tool for the analysis of speculative work. With its particular focus on how the normative and non-normative shape each other, it is useful to speculative designers interested in exploring potential relationships between different spaces, time, people, technology, and the expressions of power and control that they evoke in action. Finally, it provides a foundation, if not a rationale, for participatory designers to support speculative acts of design fiction.

### 7.3.2 A scaffold for design facilitators

Developed in response to the question – *what steps must be taken to support a participatory approach to the generation of design fictions?* – the scaffold for design facilitators recognises the complexity of the design fiction process. The question requests a procedural response and the scaffold in answer provides a broad procedural outline, however the different elements of the scaffold may be brought into dialogue in many ways. Ideally the scaffold would be built and reconfigured many times by the facilitator as part of the process of preparing a particular participatory project. It is open to change and the inclusion of other ideas in response to specific contexts.

A scaffold for design facilitators provides a series of prompts and pivots to support design researchers, participatory designers or speculative designers acting as facilitators navigate the development of a participatory design fiction project. As noted, the scaffold is not intended as a procedure, rather it is a start point for exploration. The prompts in the scaffold are intended to support the preparation of participatory approaches to design fiction practice, and not as a direct tool for participants' usage. As the title suggests the scaffold is aimed at facilitators of design fiction projects working with participant groups, this may include design researchers, participatory designers or speculative designers with varying degrees of experience in participatory projects.

## 7.4 Challenges and Limitations

The research did not address design fiction in relation to the specifics of a particular participatory design approach, instead it treated participation more broadly in order to contain the scope of the project to the resources of a PhD study.

The external projects that formed the research context influenced the participant grouping and therefore the demographics of my own study. These participatory design fiction projects also determined the amount of participant contact I had as a facilitator leading to uneven access to groupings, the shortest of which were just two hours. Working within these external projects it took time to work out where this research study could be best positioned to address my own research interests.

Having adopted RtD as a methodology I was aware that Gaver's warning that 'research through design is likely to produce theories that are provisional, contingent, and aspirational' (2012) may prove correct. In this instance I believe it has done. Though this may be viewed as a limitation I consider it more a feature of an approach which has allowed me to develop insights, observations and understandings over time.

## 7.5 Subsequent and Future work

Work arising from this study's contributions was begun in parallel with the writing-up of the thesis as opportunities for further exploration presented themselves through academic invitations and post doctoral positions.

In *Our Chemical Stories: A Design Fiction Pilot* I worked with Disabilities Studies researcher Esther Ignagni of Ryerson University (which is now known as Toronto Metropolitan University) and Lindsay Fisher of Creative Users to plan and deliver a 5-day pilot workshop. The workshop used participatory design fiction to explore disabled people's stories of their chemical lives. At the time, the theoretical framework was carried as tacit knowledge that had not been articulated in a shareable form other than the bricolage of the Portolan Chart. The chart and many of the prompts within the scaffold for facilitators were used within the workshop to help explore possible futures at the intersection of chemicals, health and disability. Our codesigning activities led to the PainSonic diegetic prototype and the world building that sprang from it explored the relational nature of chronic pain. After the workshop the group went on to create a website for the Painsonic product indicating the strength of their commitment to completing the process and its relevance to the group. Having five days with the participants allowed time for them to understand and use many of the complex concepts and challenges within the design fiction process. Both the design of the pilot project and the use of speculative heterotopia to frame the engagement worked to support and centre difference within the design fiction itself. For the disability studies academics involved the workshop process gave them access to unexpectedly different insights into the topic.

I am currently working at the Department of Computer Science at Durham University on the *Twenty20Insight* project exploring the use of design fiction within industrial settings, such as an international management consultancy and a national communications provider. I've run short workshops on industrial applications of technologies at the early stages of the Gartner Hype Cycle in order to explore over-the-horizon possibilities and the unanticipated consequences of technological innovation. Within this project I extended work on the Portolan Chart to address unanticipated consequences as part of the generation of speculations. I specifically developed part of the scaffold to further explore attitudes to use among fictional users. In addition, I adopted a wider range of speculative strategies within the workshop process to explore whether that might offer requirement engineering practices additional useful elicitation tactics. This work is ongoing and findings will be published in due course. Finally, I aim to spread the word among design researchers and facilitators about the theoretical framework and scaffold through publications in relevant conferences and journals. Then I hope to gather reflections on use from this wider pool of practitioners to further develop the relevance and utility of the work in participatory settings.

## 7.6 The implications of this research

The research is an initial exercise aimed at articulating theory and practice supportive of participatory design fiction. There are a number of potential beneficiaries.

### **Participants**

Where facilitators make use of the scaffold and theoretical framework as part of participatory design fiction projects, the research offers participants greater support at the generative stage enabling their voices to be better heard.

### **Facilitators**

Facilitators benefit from the integration of the theoretical framework and the scaffold for facilitators as it provides a grounding for a participatory approach to design fiction which they can adapt.

### **Other researchers**

The research provides a foundation to build a dialogue around participatory approaches to design fiction. The theoretical framework is a tool for the analysis of speculative work. It also provides a foundation, if not a rationale, for participatory designers to support speculative acts of design fiction.



**Industry**

The research offers industry a speculatively-informed expanded design space to better understand the social implications of technological innovations under development.

**Policy makers**

The research offers policymakers a speculatively-informed expanded design space to better understand the social implications of potential policy developments.



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*NB. Where I am aware of an author's desire to be credited for their publications under a particular name that is different to the one they published under I have cited them in accordance with their wishes. On all such occasions the material being referenced may be located without any significant difficulty.*





# Appendix A

## A.1 Literary pieces

### **The Road Not Taken**

Two roads diverged in a yellow wood,  
And sorry I could not travel both  
And be one traveler, long I stood  
And looked down one as far as I could  
To where it bent in the undergrowth;

Then took the other, as just as fair,  
And having perhaps the better claim,  
Because it was grassy and wanted wear;  
Though as for that the passing there  
Had worn them really about the same,

And both that morning equally lay  
In leaves no step had trodden black.  
Oh, I kept the first for another day!  
Yet knowing how way leads on to way,  
I doubted if I should ever come back.

I shall be telling this with a sigh  
Somewhere ages and ages hence:  
Two roads diverged in a wood, and I—  
I took the one less traveled by,

And that has made all the difference.

*Robert Frost*

**Extract from *The analytical language of John Wilkin***

These ambiguities, redundancies and deficiencies recall those attributed by Dr. Franz Kuhn to a certain Chinese encyclopedia entitled *The Celestial Emporium of Benevolent Knowledge*. On those remote pages it is written that animals are divided into (a) those that belong to the Emperor, (b) embalmed ones, (c) those that are trained, (d) suckling pigs, (e) mermaids, (f) fabulous ones, (g) stray dogs, (h) those that are included in this classification, (i) those that tremble as if they were mad, (j) innumerable ones, (k) those drawn with a very fine camel's hair brush, (l) others, (m) those that have just broken a flower vase, (n) those that resemble flies from a distance (Borges, 1964).

# Appendix B

## B.1 ProtoPolicy

### B.1.1 Soulaje Design Fiction



Figure B.1 Soulaje - film still

### B.1.2 Soulaje Euthanasia Wearable



Figure B.2 Soulaje Euthanasia Wearable

### B.1.3 Soulaje User Manual

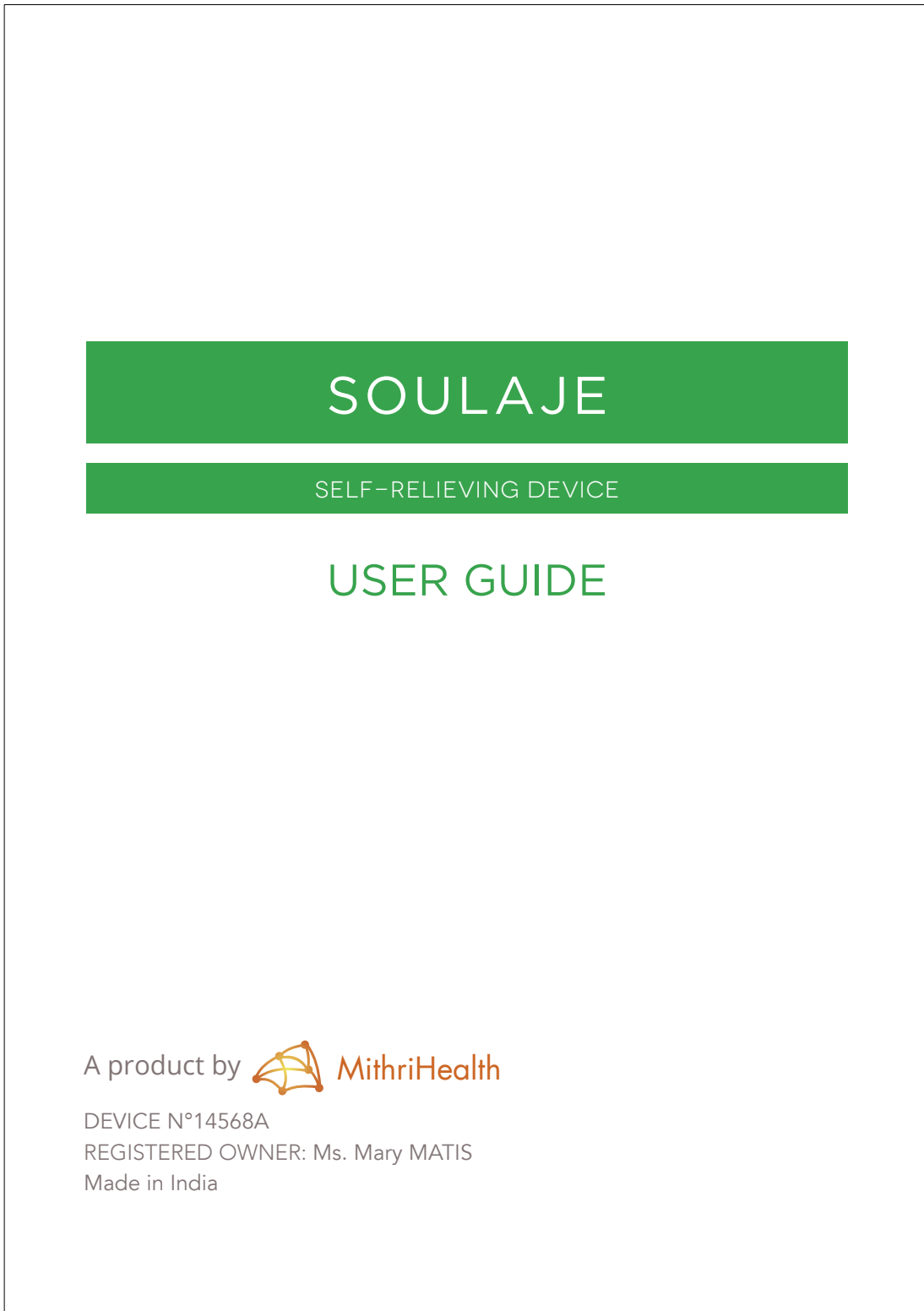


Figure B.3 Soulaje User Manual

## FAQ

### – Is self-administered euthanasia legal?

Yes, Self-Administered Euthanasia has been legal following the introduction of the Self-Assisted Dying Bill on 7th May 2021.

### – Is there any risk of accidental release?

No, the use of Soulaje includes safeguards to avoid accident. Each step is validated either by your General Practitioner and Smart Object Therapist, or by yourself with pre-agreed authorisation processes.

### – Can I choose anywhere I want to die?

Soulaje may be used in many areas of the country, however, for the safety of others the device will not activate in a range of locations, such as motorway networks, Government buildings and primary schools. It is also prohibited to use the device while operating heavy machinery.

### – What will happen to my body?

When you have passed away, Soulaje will automatically notify call the mortuary services and your GP who are going to take care of your body according to the prescribed laws and your registered last wishes. We recommend you to take care of your funeral arrangements with a Soulaje affiliated provider.

### – Will my Soulaje device be reused?

No, your Soulaje Self-Administered Euthanasia Wearable is single-use device and will be destroyed after deployment, unless specified to be considered as a memorial object. If so, it will be presented to your identified next of kin.

Figure B.4 Soulaje User Manual Page 1

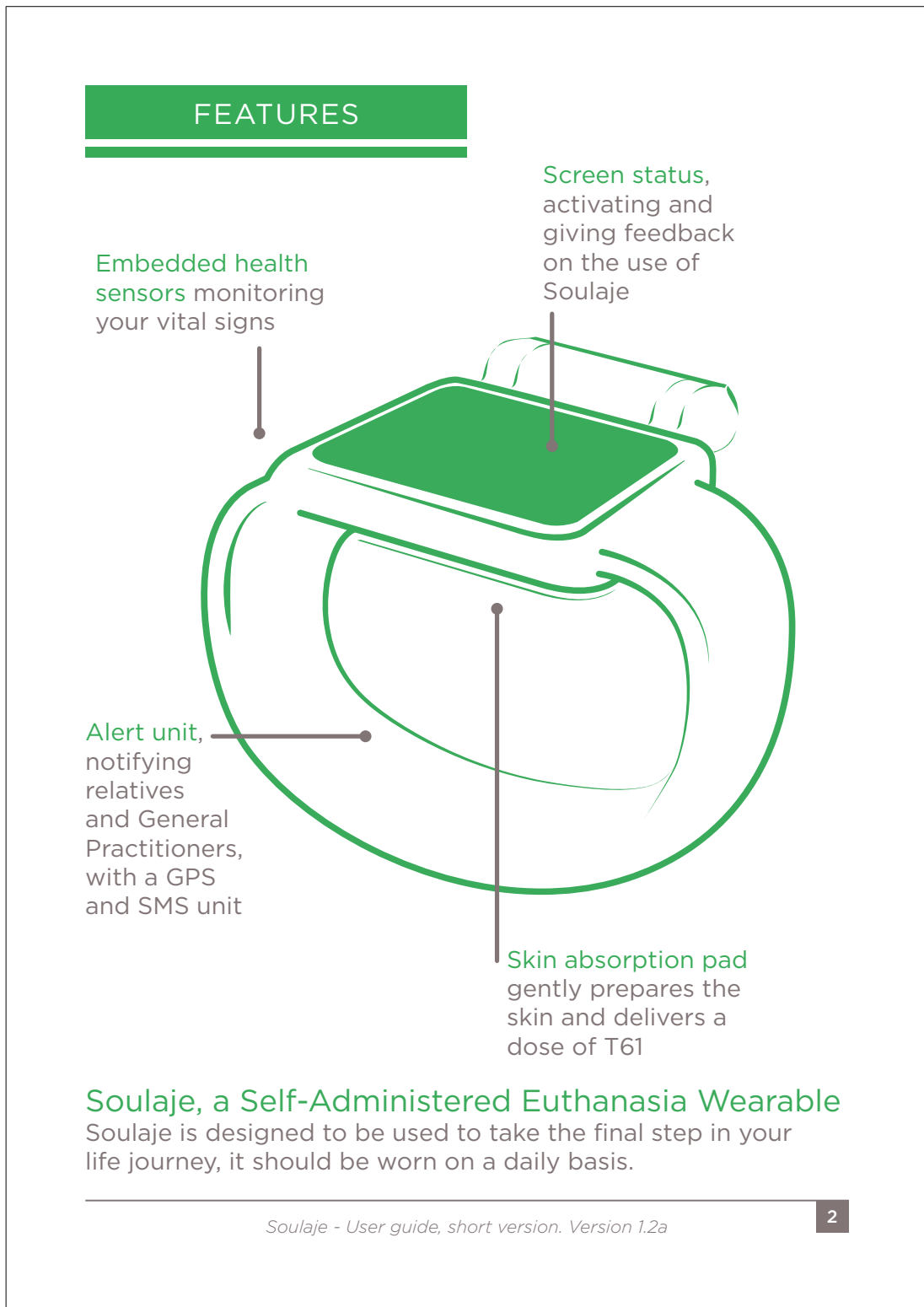


Figure B.5 Soulaje User Manual Page 2

## HOW TO USE IT

### 1. GP prescribes, authorises & fits your Soulaje



#### You

You have decided it is time die. Your GP will follow the National Euthanasia Protocols and prescribe Soulaje.



#### Your Medical Team

Your General Practitioner and Smart Object Therapist will fit and authorise the device with your agreement.

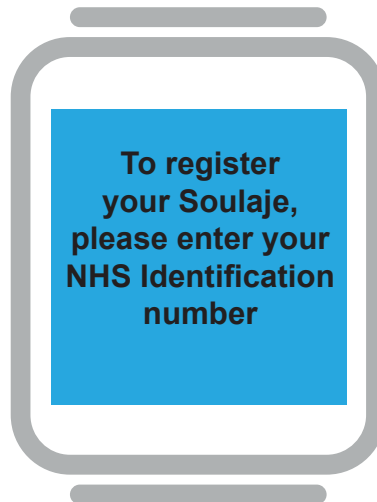


Figure B.6 Soulaje User Manual Page 3



## HOW TO USE IT

### 2. Activate your Soulaje



#### You

This stage requires 2 authorisations as pre-agreed with your GP. Following authorisation you have 48 hours to reflect on your decision, no further action may be taken during this time.



#### Your next of kin

Soulaje will initiate audio and video recording for your safety. Your medical team and next of kin will be notified of your decision.

.....

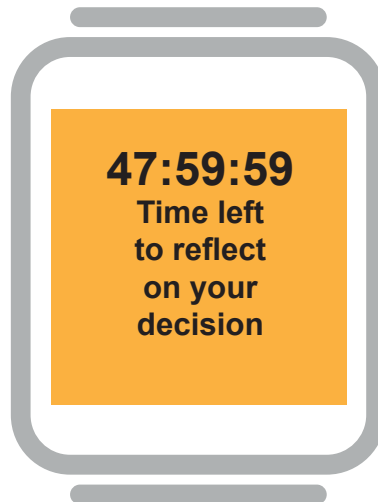


Figure B.7 Soulaje User Manual Page 4

## HOW TO USE IT

### 3. Give your final authorisation



You

You have had 48 hours to reflect on your decision.

If you wish to continue you will need to make a final confirmation within the next 24 hours

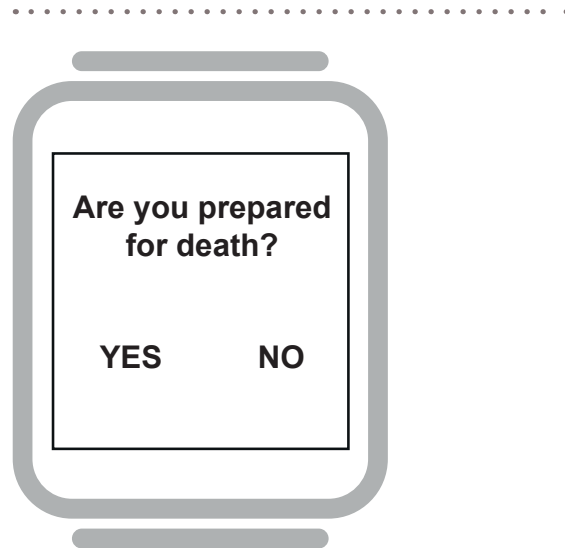


Figure B.8 Soulaje User Manual Page 5

## HOW TO USE IT

### 4. Ensure a quiet and accessible place



#### You

The dose will be delivered in the few minutes, make sure you have shared your last wishes with your relatives.



#### Mortuary services

As Soulaje's sensors confirm your death mortuary services set off to take care of your body.

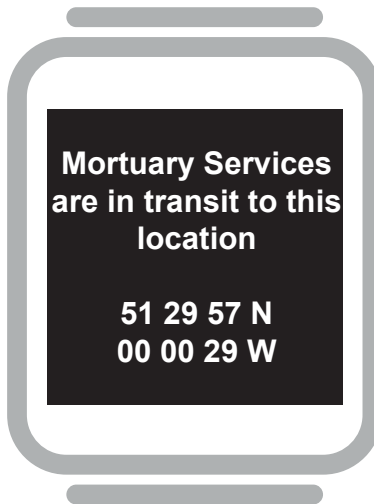


Figure B.9 Soulaje User Manual Page 6

## DISCLAIMER

Soulaje is offered in accordance with Self-Assisted Dying legislation (7th May 2021). Soulaje is a Self-Administered Euthanasia Wearable helping you to pass away with dignity, providing a painless and self-sufficient experience when the time is right.

The use of Soulaje should reflect an informed personal choice made freely without coercion or duress. We invite you to take time to discuss your decision with your next of kin and agree the course of action with your General Practitioner before committing to use Soulaje.

Please note, Soulaje is a medical device for euthanasia and contains lethal elements. This product is for use by its registered owner. It cannot be transferred to anyone else. This product may only be used in the country of issue.

## LEGAL AGREEMENT

By activating Soulaje, I, the undersigned, agree with the terms of use as defined by MirthriHealth, following the agreement signed with the Department of Health on the use of Self-Administered Euthanasia Wearables. With this statement, I declare neither me nor my family will press charges against MirthriHealth or my General Practitioner for any related emotional trauma caused by the use of Soulaje.

Date: 12/09/2023

Place: Oxford

Signature:



### B.1.4 Soulaje Protest Flyer



**DOES SHE LOOK LIKE  
SHE WANTS TO DIE?**

**SAY NO TO THE DEATH WATCH!**  
Join our civic march on  
16th July at Trafalgar  
Square - 3pm (London)  
against self-euthanasia

Or connect to our online demonstration on  
ProtestR ([protestr.com/likeup1607](http://protestr.com/likeup1607))



**LifeUp** - [www.lifeUp.co.uk](http://www.lifeUp.co.uk)  
@LifeUpUK  
*National Movement Against Self-Euthanasia*

Figure B.11 Soulaje protest flyer

## B.1.5 Smart Object Therapist



Figure B.12 Smart Object Therapist - film still

Professional opportunity ref. AX876H  
Last update: 24th June 2022 21.06 BST



## SMART OBJECT THERAPIST

### GENERAL SPECIFICATIONS

*Location:* Manchester

*Employer:* BetterHome Co. (Privately Owned Public Service Agreement n°876A)

*Contract:* Key time contract

*Salary:* Depending on candidate's experience

*Transportation:* A driverless car (with access granted to pedestrian areas) is supplied.

### JOB DESCRIPTION

We are looking for a Smart Object Therapist, working in north-east district of Manchester. Attentive, thorough, even-tempered, the successful candidate will work with older people ageing at home to facilitate and improve their relationship with their smart house and their access to personalised domestic products and services. The job role also includes including communication with artificial intelligence and algorithms-based software solutions.

**Key job roles include:**

- By listening and observing, diagnosing and analysing both smart domestic objects and their human owners in order to understand and then treat mismatch and incompatibility.
- Explaining, with pedagogy, problems of deficient smart appliances to their owners.
- Recalibrating human behavior to facilitate interaction between smart objects and their owner, by evaluating the psychological compatibility of the older person with the smart home.
- Fixing and adjusting smart appliances to adapt their features to owner's rituals.
- Ensuring smart appliances are fully delivering their promises with the personalised domestic services. Helping people to age at home by improving their interactions with the smart home through artificial intelligence.

### REQUIREMENTS AND QUALIFICATIONS

Candidates must demonstrate a strong capacity of autonomy and empathy for humans as well as for smart objects. According to DSM-6 guidelines, skills in systemic management of digital relationships and knowledge about bugology (computer failures studies) are a strong advantage. Previous experience in smart objects oriented programming is considered an advantage.

**Professional skills and qualifications required:**

- Graduated in Human-Computer Psychology (Bachelor level), option «Conflict resolution»
- Smart House Operator, professional qualification (not older than 6 months, renewable).
- Privacy Protector certification (cosigned by the Department of Health and Google).
- At least 2 years of experience in a R&D department of smart objects provider or any hospital in the Department of digital related diseases (private or public service).

### ADDITIONAL INFORMATION


If you are interested by this opportunity, please scan this paper with your NFC reader.   
More information and online application: <http://www.rch.man.co.uk/jobs/offer-AX876H>

Figure B.13 Smart Object Therapist Job Description



**BetterHome Co.**  
12 Queen St  
Manchester

## INTERVENTION REPORT

Smart Object Therapist: **Celia Karish** (aut. 9-865)  
Intervention on site - 26/06/2023

CASE REF 243A

ORIGINAL VERSION  
DATA LOG ATTACHED

<p><b>Patient information</b></p> <p>Mr. Christian Bell, 69 yo, single 7, Alpha St Salford, Manchester</p>	<p><b>Smart home involved</b></p> <p>Model: Akademia Operating System: HoneyMoon    Version: 9.3a Manufacturer: Samsung</p>																								
<p><b>Notable medical condition</b></p> <p>Suffering from severe diabetes (type 2) Has a partial facial paralysis (left side mainly)</p>	<p><b>Previous events</b></p> <p>Mr. Bell has been relocated from his previous smart home after a domestic accident. This new home has already gone through a complete reinstall. Issues with emotion recognition due to partial facial paralysis are already known.</p>																								
<p><b>Symptom and facts observed</b></p> <p>Mr. Bell reported having trouble with his smart house lately and especially with his smart fridge. The fridge seems to malfunction and keeps ordering the same food to be delivered without caring about the specific diet of Mr. Bell and his pre-recorded preferences. Food delivered by the fridge is not corresponding to Mr. Bell's expectations and health condition.</p> <p>As the situation has lasted for over five days, Mr. Bell is now demonstrating a marked hostility towards several smart appliances, often punching them in order to obtain 'a proper result' (exact quote). The smart home cannot adapt its response to Mr. Bell's anger and distress due to his facial paralysis; thus failing any possible facial recognition of his emotional status.</p>																									
<p><b>Diagnosis</b></p> <p>Situation of mismatch in the personalisation of the food ordering service: the smart fridge is not fulfilling its mission. Notable disparity between the choices made by the smart fridge and the actual profile of Mr. Bell has been diagnosed.</p> <p>Hypothesis: As Mr. Bell's grandson visited him last week, it seems the smart home adapted its services on the go to the new visitor, overriding Mr. Bell's preferences by adjusting itself to his grandson's ones. Smart choice processes are now confused as they are not programmed to adapt to two different diets at the same time.</p> <p>A recalibration of Mr Bell's behaviour is necessary to help the smart home reconnect with his profile and habits. The smart fridge's internal system will be re-program to record the information from Mr. Bell's behaviour recalibration.</p>																									
<p><b>Prescription / Future interventions</b></p> <table border="0"> <tr> <td><b>Patient</b></td> <td><b>Smart Object</b></td> </tr> <tr> <td><input type="checkbox"/> RELOCATION</td> <td><input type="checkbox"/> REBOOTING</td> </tr> <tr> <td><input checked="" type="checkbox"/> RECALIBRATION</td> <td><input type="checkbox"/> PATCHING</td> </tr> <tr> <td><input type="checkbox"/> CONCILIATION THERAPY</td> <td><input type="checkbox"/> UNINSTALLING</td> </tr> <tr> <td><input type="checkbox"/> NO ACTION REQUIRED</td> <td><input type="checkbox"/> DOWNGRADING</td> </tr> <tr> <td></td> <td><input checked="" type="checkbox"/> NO ACTION REQUIRED</td> </tr> </table> <p>Note: Standard guidelines for reconciliation with the smart appliance have been recommended through daily activities.</p>	<b>Patient</b>	<b>Smart Object</b>	<input type="checkbox"/> RELOCATION	<input type="checkbox"/> REBOOTING	<input checked="" type="checkbox"/> RECALIBRATION	<input type="checkbox"/> PATCHING	<input type="checkbox"/> CONCILIATION THERAPY	<input type="checkbox"/> UNINSTALLING	<input type="checkbox"/> NO ACTION REQUIRED	<input type="checkbox"/> DOWNGRADING		<input checked="" type="checkbox"/> NO ACTION REQUIRED	<p><b>Intervention executed on site</b></p> <table border="0"> <tr> <td><b>Patient</b></td> <td><b>Smart Object</b></td> </tr> <tr> <td><input checked="" type="checkbox"/> DEESCALATION</td> <td><input type="checkbox"/> REBOOTING</td> </tr> <tr> <td><input type="checkbox"/> INSTANT CONCILIATION</td> <td><input checked="" type="checkbox"/> PATCHING</td> </tr> <tr> <td><input checked="" type="checkbox"/> PROBLEM EXPLANATION</td> <td><input type="checkbox"/> UNINSTALLING</td> </tr> <tr> <td><input type="checkbox"/> NO ACTION REQUIRED</td> <td><input type="checkbox"/> DOWNGRADING</td> </tr> <tr> <td></td> <td><input type="checkbox"/> NO ACTION REQUIRED</td> </tr> </table> <p>Note: Re-programming smart house to follow the reconciliation program with its owner.</p>	<b>Patient</b>	<b>Smart Object</b>	<input checked="" type="checkbox"/> DEESCALATION	<input type="checkbox"/> REBOOTING	<input type="checkbox"/> INSTANT CONCILIATION	<input checked="" type="checkbox"/> PATCHING	<input checked="" type="checkbox"/> PROBLEM EXPLANATION	<input type="checkbox"/> UNINSTALLING	<input type="checkbox"/> NO ACTION REQUIRED	<input type="checkbox"/> DOWNGRADING		<input type="checkbox"/> NO ACTION REQUIRED
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	<input type="checkbox"/> NO ACTION REQUIRED																								
<p><b>Scheduled follow-up</b></p> <p>Next session scheduled on 9/07/2023 at Mr. Bell's place.</p>																									
<p><b>Additional comments</b></p> <p>Mr. Bell is acting as a technocritic following the last incident accident with his smart home. A strong defiance towards the conciliation is to be expected.</p>																									

No sharing is allowed - Document covered by doctor-patient confidentiality (art. 973B CXC)

Figure B.14 Smart Object Therapist Intervention Report



## Three simple exercises to reconcile with your smart fridge

### 1. Restore a proper link with your home

🕒 An hour

These activities aim to help the smart home recognize you as its primary user.



1. - Walk in every room for 4 times for 5 minutes, each time
2. - Stay seated for 30 minutes in your favorite room
3. - Repeat your activation phrase at regular intervals

### 2. Let it getting to know your food habits

🕒 Two hours

These activities will support the smart fridge in its adaptation to your preferences.



1. Prepare small portions of ten different meals
2. The smart house will automatically detect your habits, dietary requirements and skills when you cook
3. Either eat your meals or dispose of them, the smart house will analyse your choices and preferences

### 3. Help it monitoring your health

🕒 An hour

These activities will foster health monitoring provided by your smart house.



1. Right after eating, go for a nap. Your smart fridge will connect to the health sensors embedded in your smart bed in order to analyse the quality the impact of different foods on your digestion according to your sleep pattern. These information will be used to adapt it to your diet

#### ⚠️ What to do in case of troubles:

1. Deactivate smart appliances with your domestic emergency switch.
2. Your Smart Object Therapist will be instantly warned and will contact you within the next 15 minutes to check upon you. In case of injury, please contact the emergency service (112).



**BetterHome Co.**  
12 Queen St  
Manchester

Your Smart Object Therapist: **Celia Karish** (aut. 9-865)  
Prescription delivered on 26/06/2023  
Recalibration with a malfunctioning smart fridge

CASE REF 243A  
PATIENT COPY

Figure B.15 Smart Object Therapist Reconciliation Guide

## B.1.6 Design Concepts

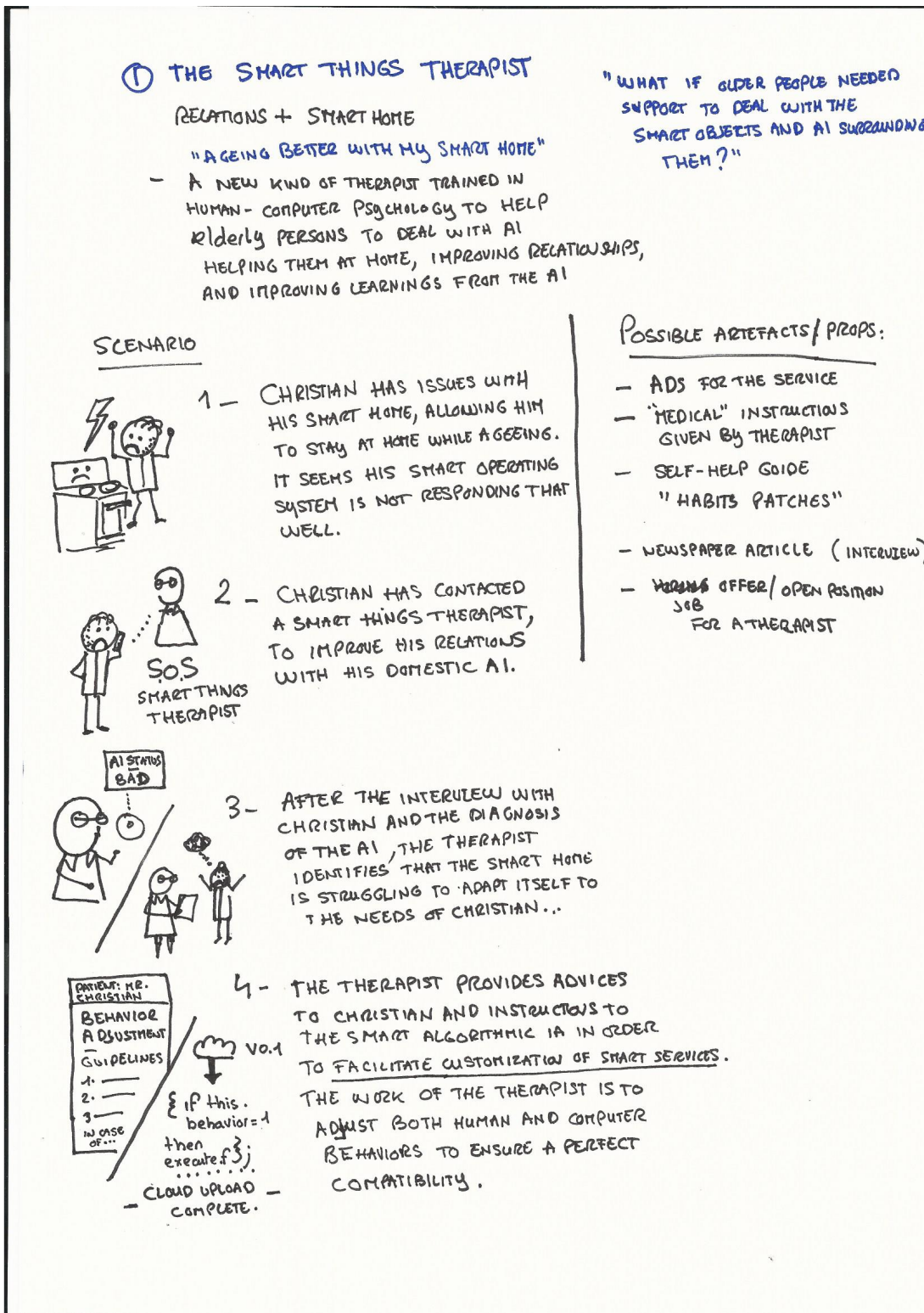


Figure B.16 The Smart Things Therapist

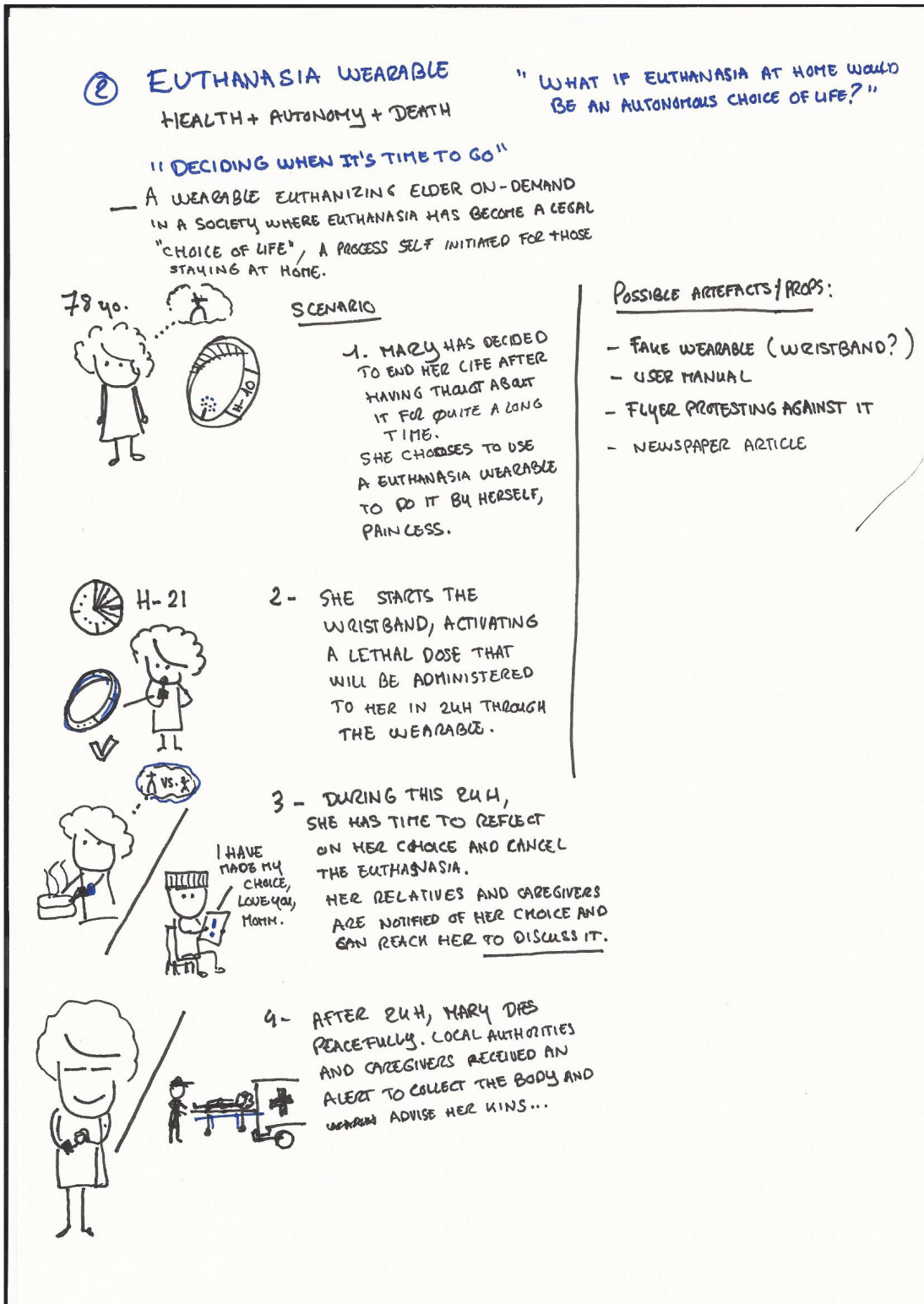


Figure B.17 Euthanasia Wearable

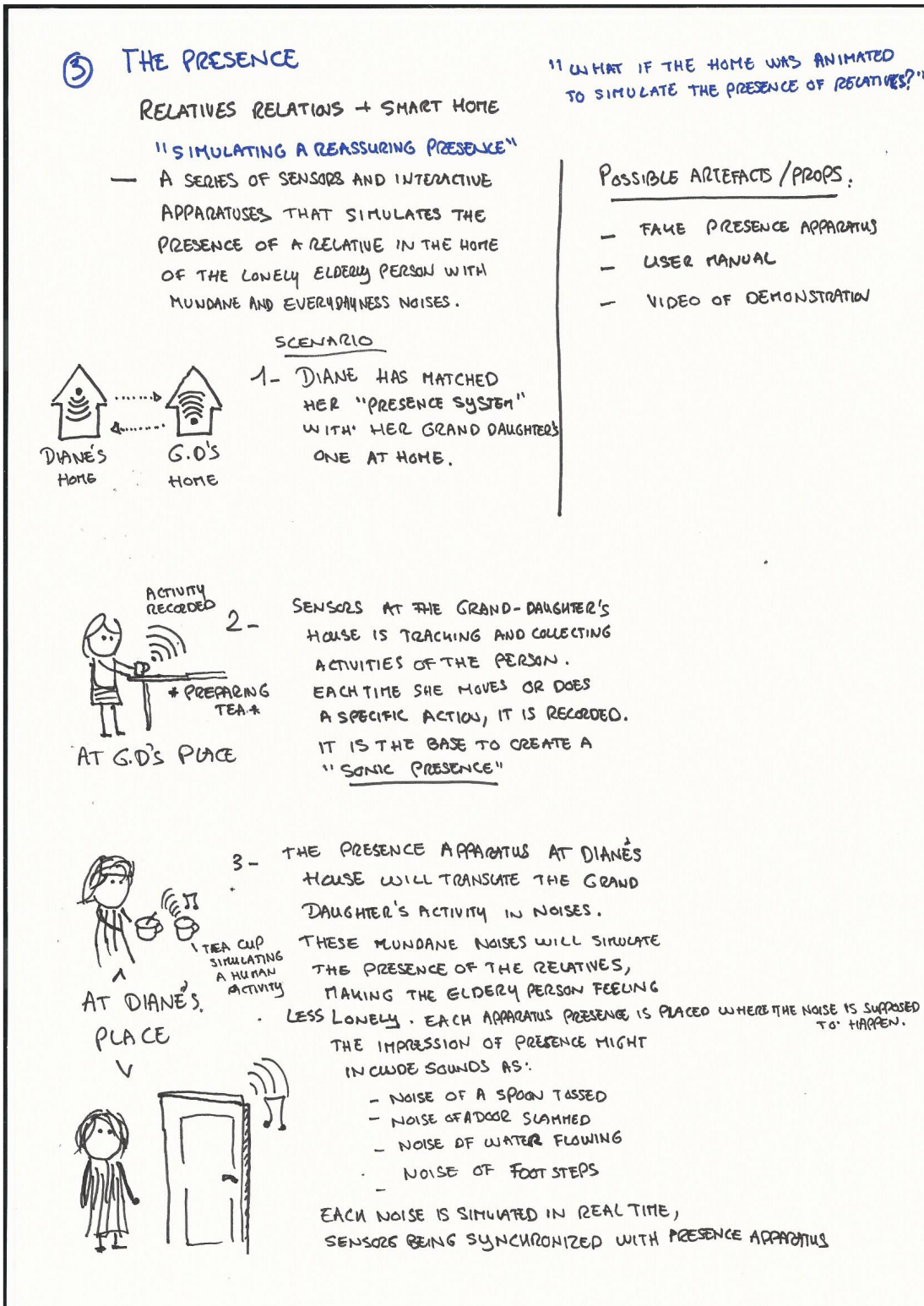


Figure B.18 The Presence

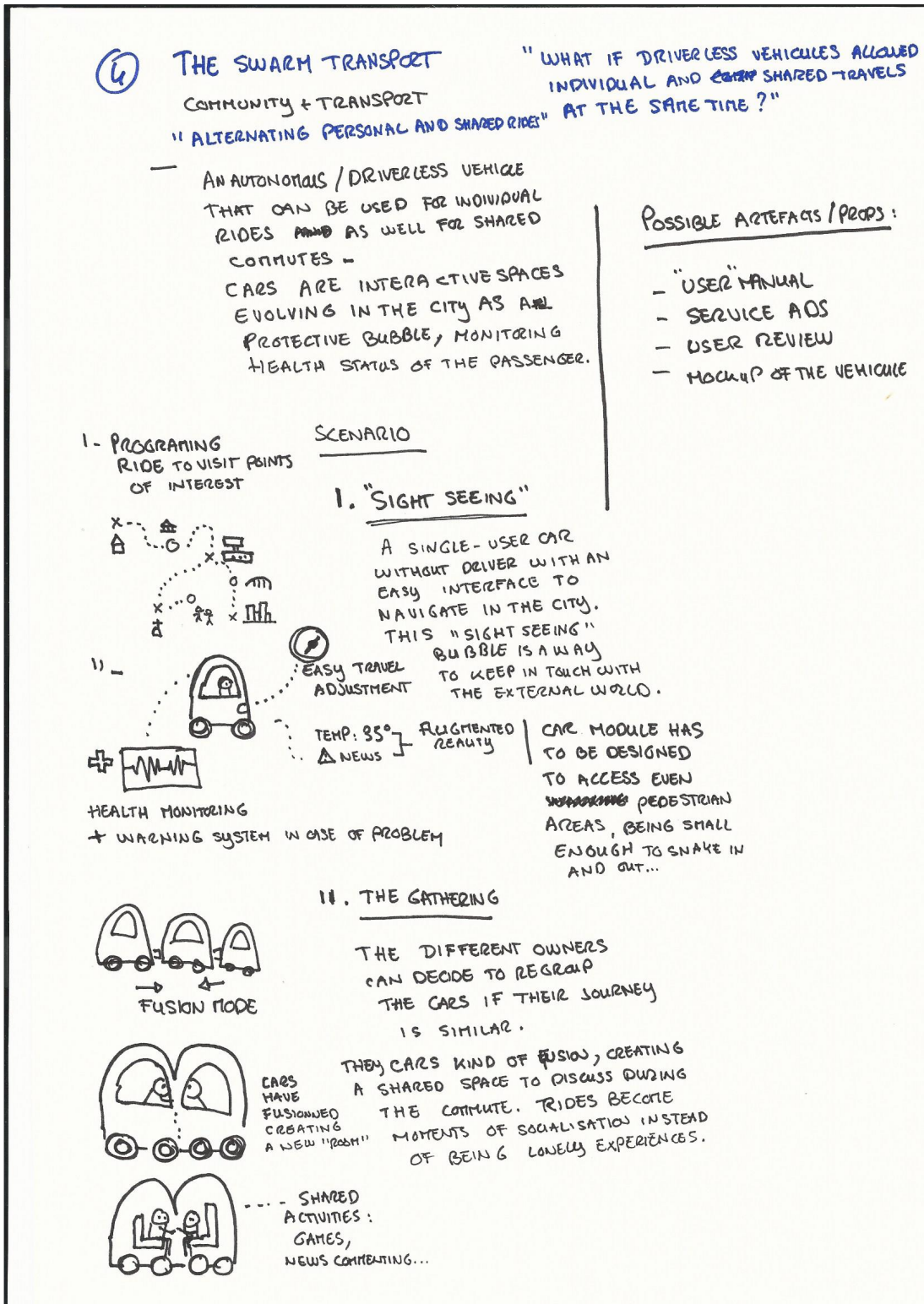


Figure B.19 The Swarm Transport



Figure B.20 Holochat




Figure B.21 A participant presents the illuminated pool table - a video still

## B.2 What If?


### B.2.1 Mentian



Figure B.22 Mentian - film still




Reid Lauder  
Technologies



## Mentian™ Consultation System

A VOICE FOR PEOPLE LIVING WITH DEMENTIA



The Mentian™ Consultation System gives accurate and lucid natural language responses to medical history queries, even for complex and atypical symptoms. Developed in partnership with the NSH by Reid Lauder Technologies and following the NICE dementia pathway, the Mentian™ Consultation System is being introduced in the community to support people living with dementia.

Working with the in-home Mentian™ Consultation System is simple and efficient, even when engaging with non-communicating patients. Once the sensor array is fitted and operationally confirmed health professionals can track, share and manage complex multi-morbidities securely during the privacy of a home visit.

For more information [www.reidlauder.com/mentian](http://www.reidlauder.com/mentian)

The patient is fitted with an array of sensors to provide health metrics across a number of morbidities, including those most common for people living with dementia, chest infections and Urinary Tract Infections. The Mentian™ Consultation System encrypts all data transfers between the private server (Triple Modular Redundancy) and sensor array, but uniquely limits access to patient data to the doctor's voice commands, replicating the privacy of the consultation room experience.

In addition, when authorised by the patient, or under Type 2 Lasting Power of Attorney, the Mentian™ Consultation System shares anonymised data with researchers to further refine our algorithms to benefit of patient outcomes.

Figure B.23 Mentian Product Information Sheet





Figure B.24 Mentian Health Sensor Array



Figure B.25 Mentian Authorisation Card



Figure B.26 The Mentian Medical Table

### B.2.2 Design Concepts

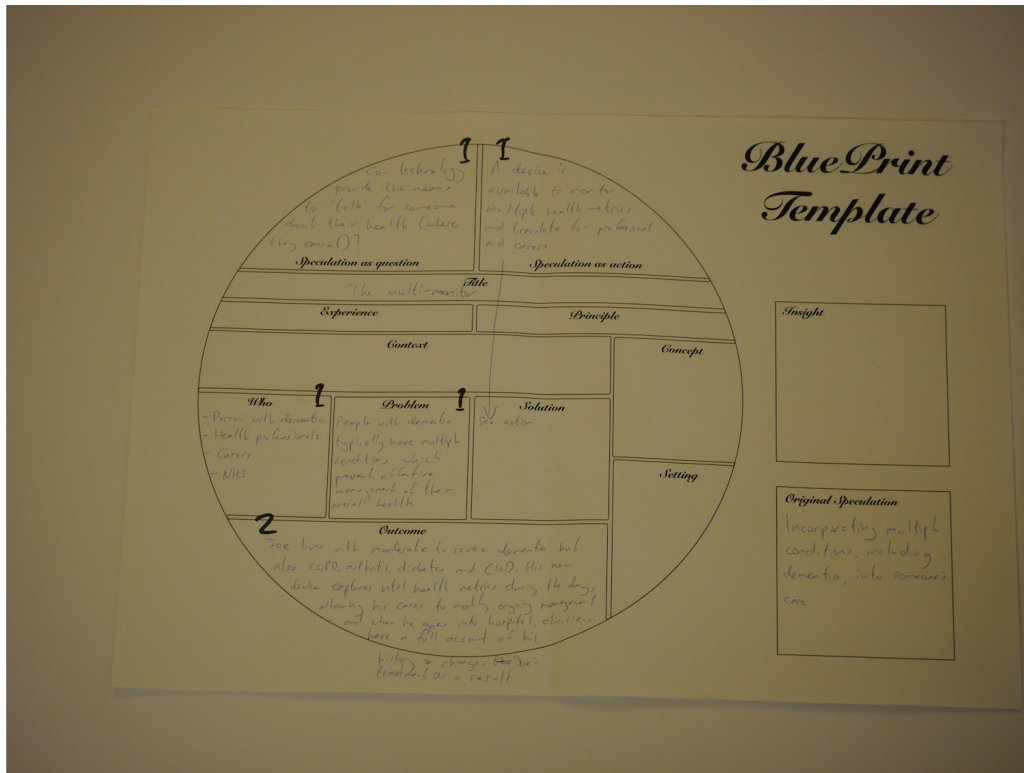


Figure B.27 Blueprint template – The Multi-monitor Page One

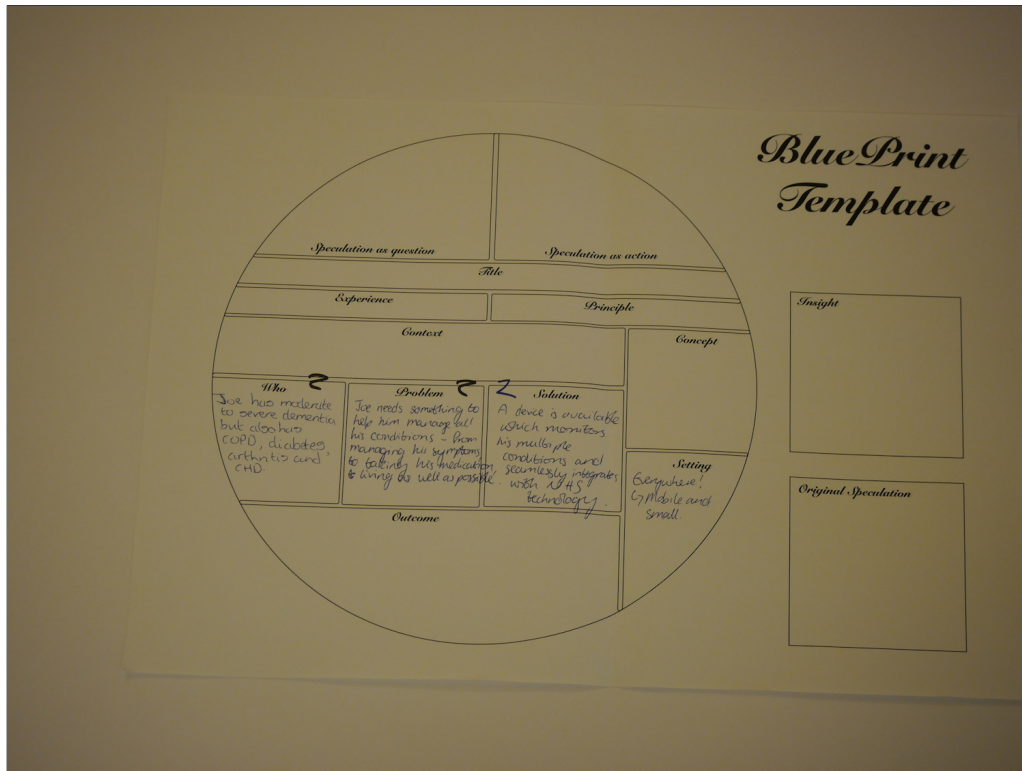


Figure B.28 Blueprint template – The Multi-monitor Page Two

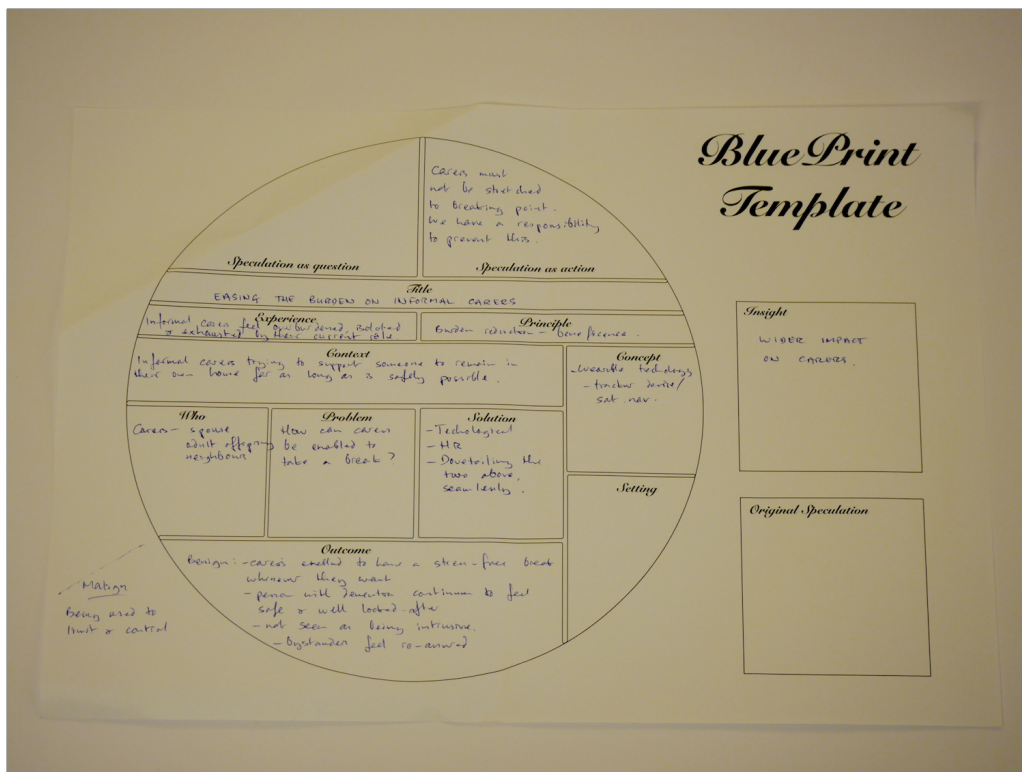


Figure B.29 Blueprint template – Easing the burden on informal carers

### B.3 Visual communication artefacts and tools

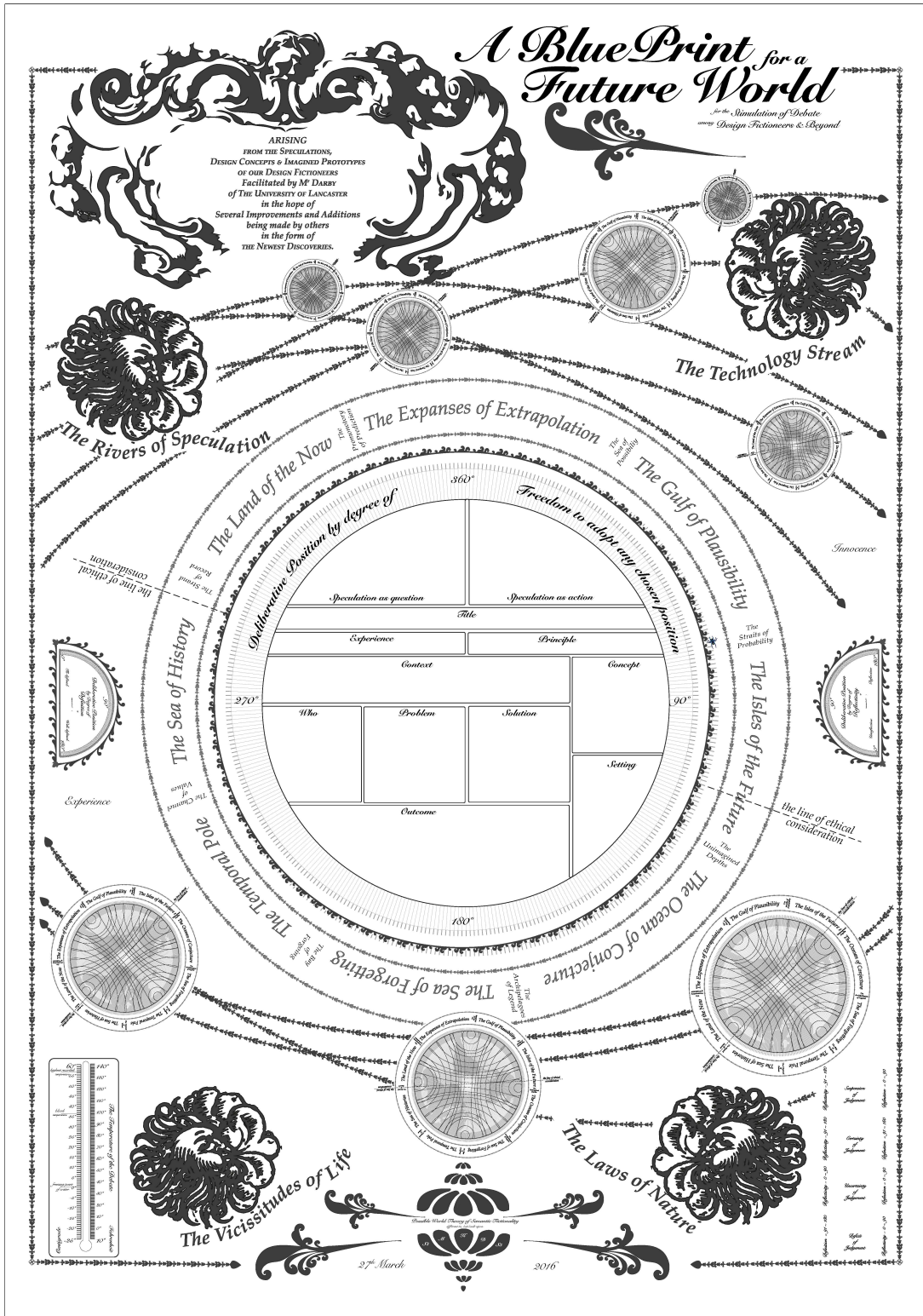


Figure B.30 A Blueprint for a Future World

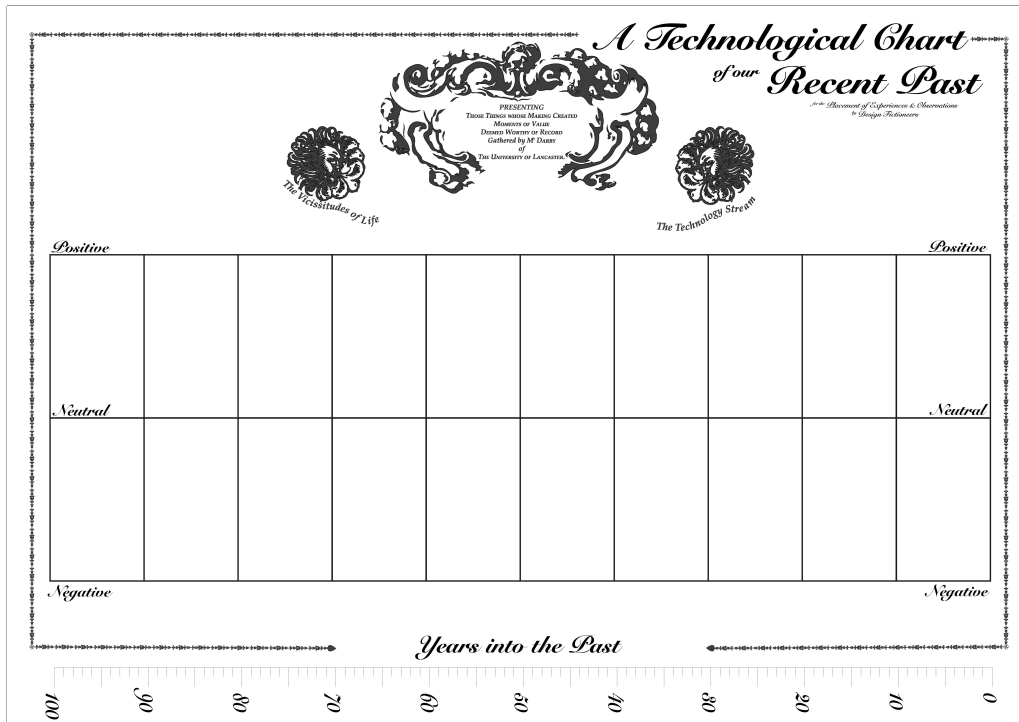


Figure B.31 A Technological Chart of the Recent Past

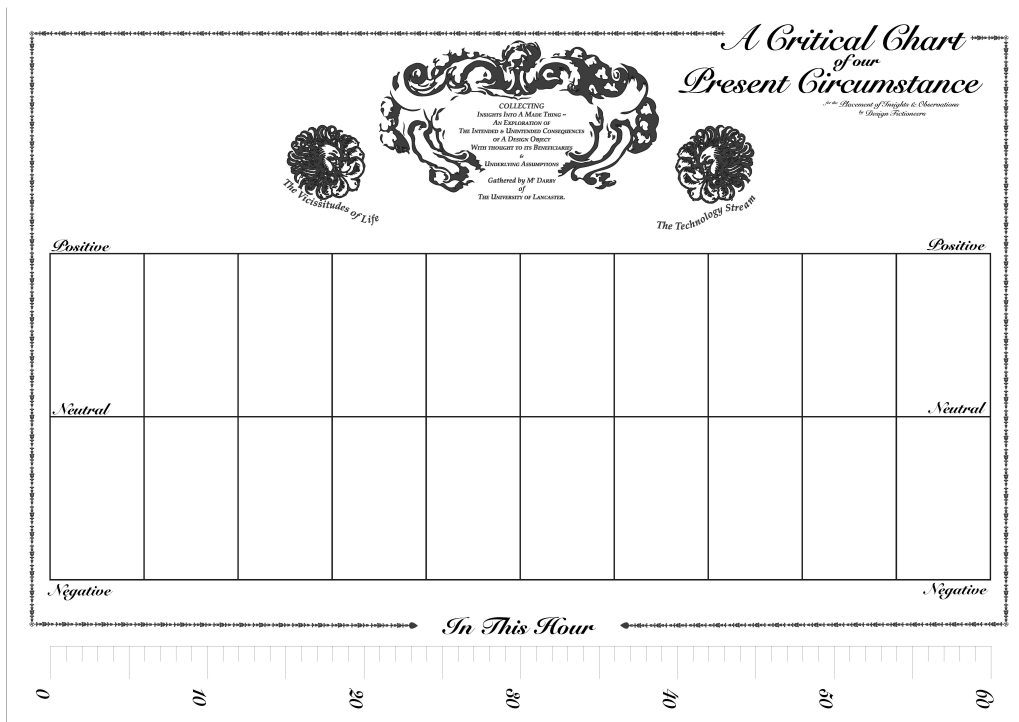


Figure B.32 A Critical Chart of the Present Circumstance

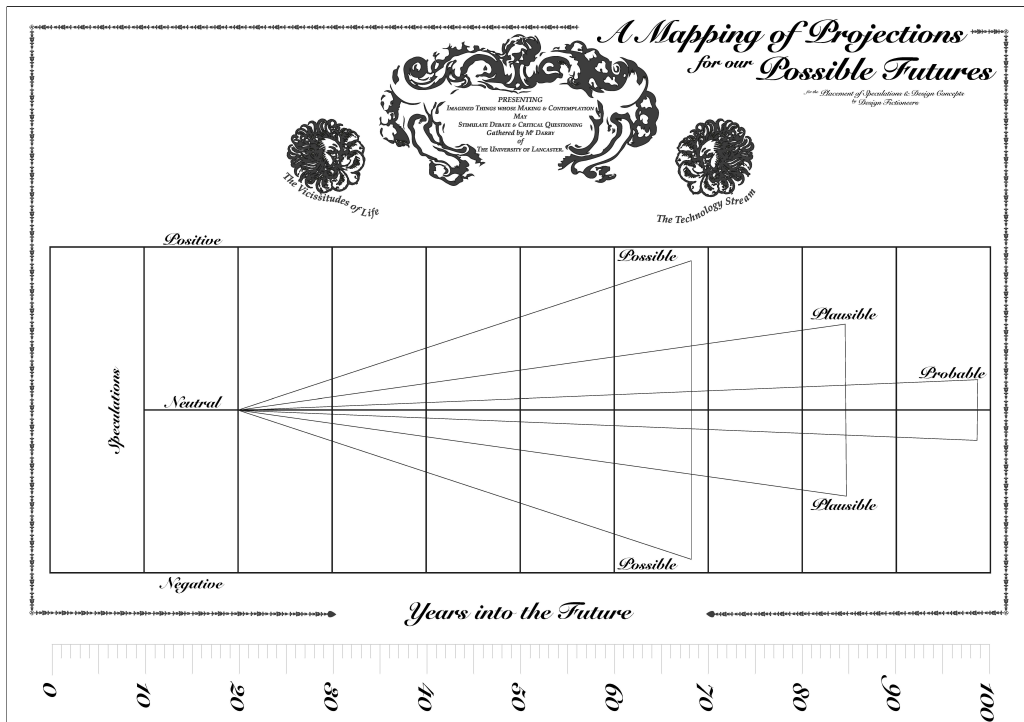


Figure B.33 A Mapping of Projections for the Possible Future

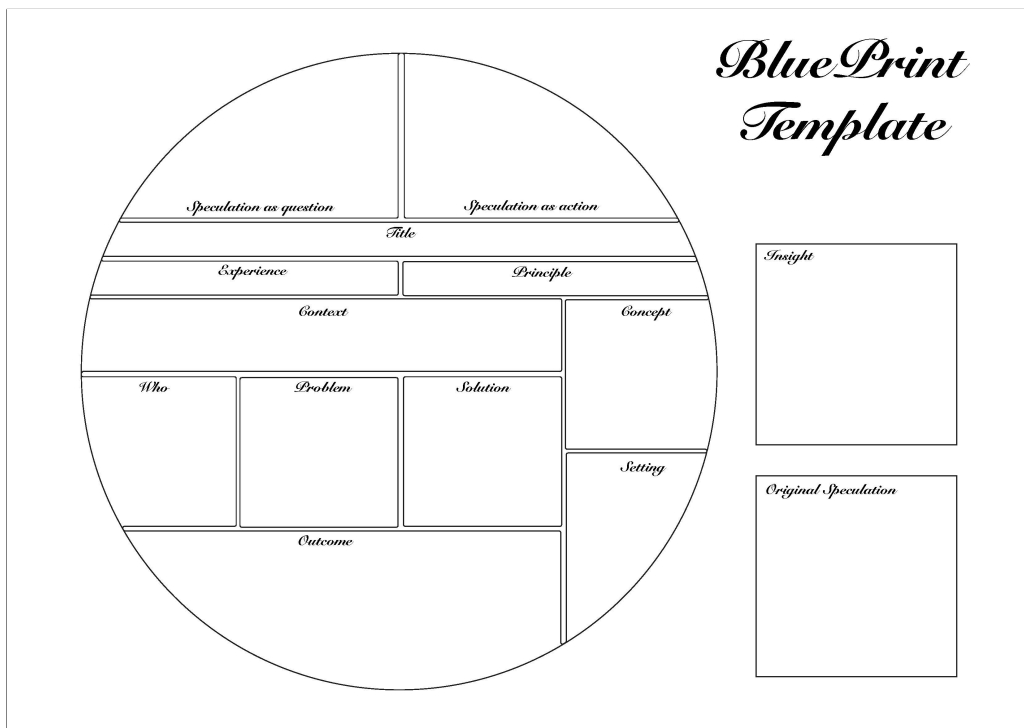


Figure B.34 BluePrint Template

# *Cognitive Heuristics for Abstract Consideration*

*A navigational aid for Design Fictioneers to explore design spaces*

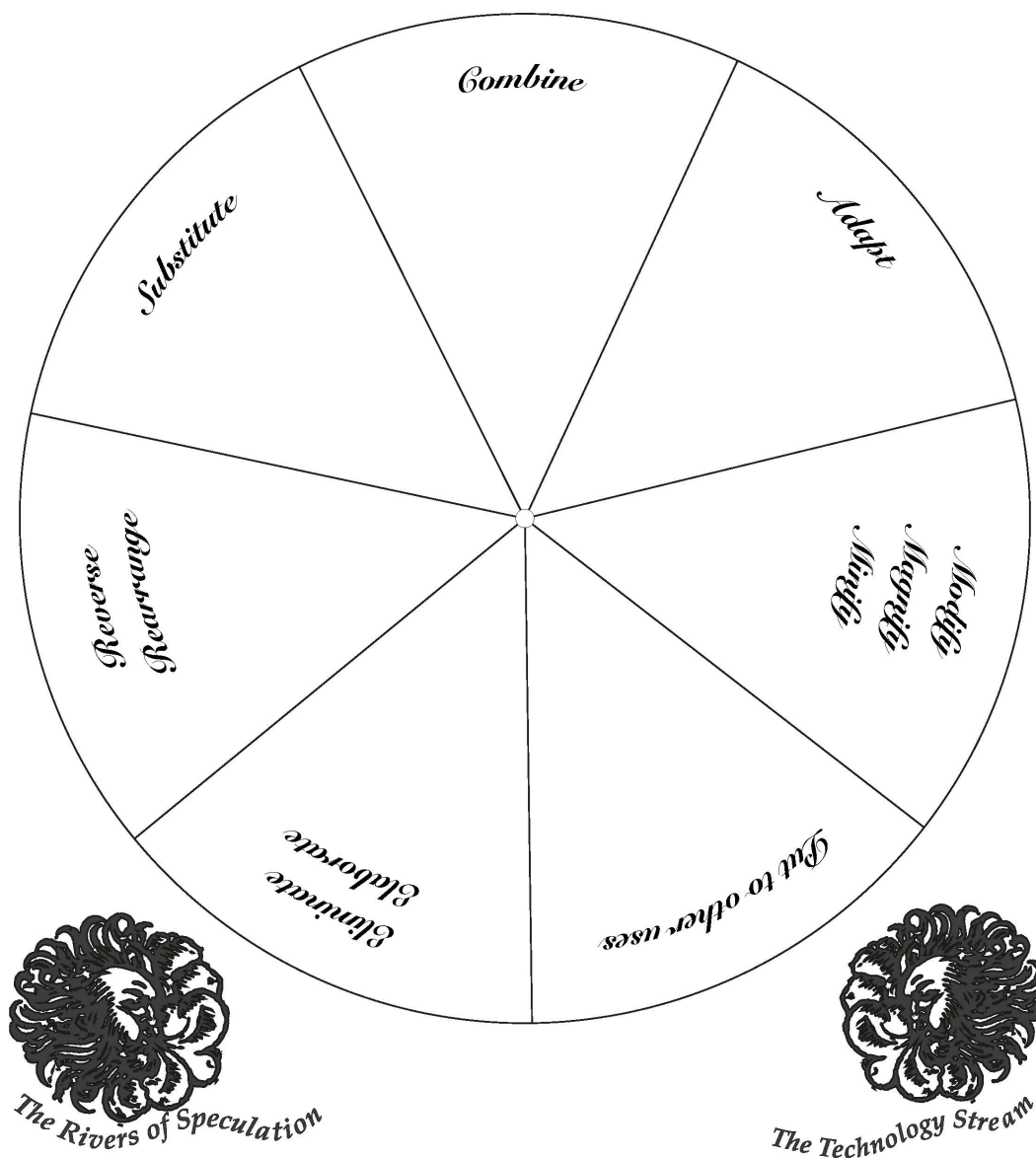


Figure B.35 Cognitive Heuristics for Abstract Consideration





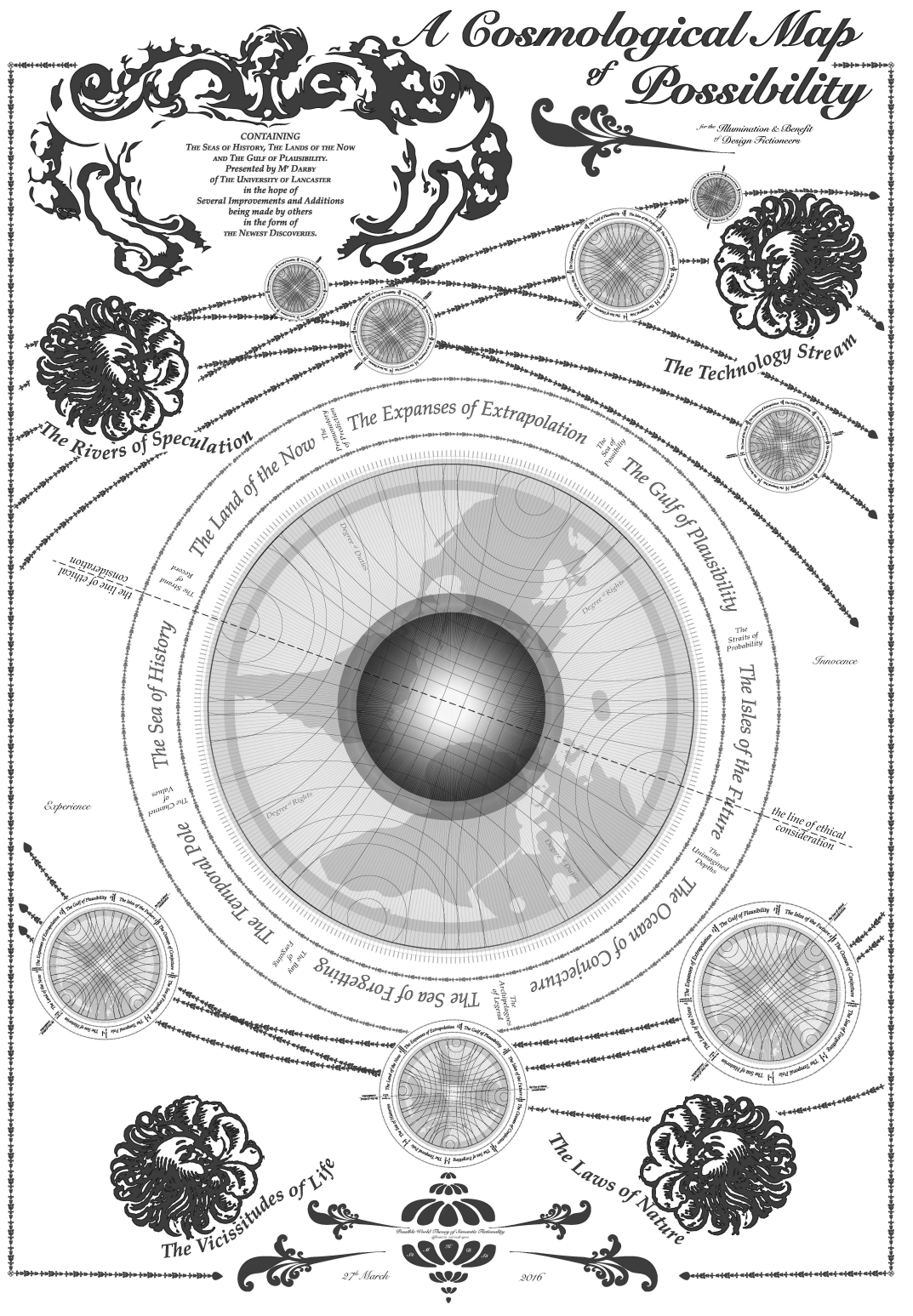


Figure B.37 A Cosmological Map of Possibility for the Illumination and Benefit of Design Fictioneers