THE VALUE OF DESIGN RESEARCH

A PRAGMATICS FRAMEWORK FOR DESIGN FICTION

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ABSTRACT

Design fiction, is often defined as the "deliberate use of diegetic prototypes to suspend disbelief about change" (Sterling 2012). Practically speaking design fictions can be seen as "a conflation of design, science fact, and science fiction" (Bleecker 2009, p. 6) where fiction is employed as a medium "not to show how things will be but to open up a space for discussion" (Dunne & Raby 2013, p.51). The concept has gained traction in recent years, with a marked increase in published research on both the meta-theory of the practice itself and also studies of using it in a variety of contexts.

However, the field is in a formative period. Hales talks about the term 'design fiction as being "enticing and provocative, yet it still remains elusive" (2013, p.1) whereas Markussen & Knutz sum up this epoch in the history of design fiction by saying "It is obvious from the growing literature that design fiction is open to several different interpretations, ideologies and aims." (2013, p.231) It seems, therefore, that design fiction currently occupies a liminal space between the excitement of possibility and the challenges of divergence.

In this paper I will highlight sites of ambiguity and describe the disparate nature of design fiction theory and practice in order to illuminate the inherent complexities. Alongside I suggest elements of a 'pragmatics framework' for design fiction in order to strengthen foundations by facilitating a reduction in ambiguity, whilst being careful not to over specify and therefore constrain the ability to grow and adapt.

Keywords: Design fiction, speculative design, design theory

1 INTRODUCTION

The term 'design fiction' was originally coined almost incidentally, while Sterling considered how design thinking impacted on his literary output, "Design fiction reads a great deal like science fiction; in fact it would never occur to a normal reader to separate the two". As a nascent concept Sterling was simply distinguishing the "hand-waving hocus-pocus" of traditional science fiction from the "more practical, more hands-on" design fiction (Sterling 2005, p.30). In the six years since Bleecker named design fiction as its own practice (2009) its popularity has grown. Alongside this growth, however, has come a set of divergent perspectives on what can or cannot constitute design fiction, why you might practice it, and what it might be for. Tanenbaum acknowledges that there is some debate here "[Design fiction's] meaning has remained somewhat up for grabs", and goes on to ask whether it is science fiction, speculative design or fiction *about* design. He concludes by saying that design fiction can be a way of envisioning, a communication tool, and a way of building inspiration and motivation for design concepts (Tanenbaum 2014, p.22-23). Markussen & Knutz claim that there are "several different interpretations, ideologies and aims" and that there "is a need to increase understanding of design fiction as a research method and approach" (2013, p. 231). Meanwhile Julian Bleecker says that no matter how exciting the concept is, understanding how to operationalise (i.e. to put into practice; observe in action; measure; 'use') design fiction is the big challenge (2013). The location of design fiction within the constellation of other future orientated design practices isn't clear either. Some accounts see design,

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speculative design, and design fiction as being in a hierarchical relationship (Lindley et al. 2014), whereas others see design fiction and speculative design as distinct practices and sitting next to one another rather than in a hierarchy (Dunne & Raby, 2013, p. 100). Even the precise role of the word 'fiction' is debated; it could imply a preoccupation with technology (Dunne & Raby, 2013, p. 100); it could suggest that the designs in question are "unreal" (Auger 2013, p.12); and it could refer to the medium that the designer is using (Lindley et al. 2014). Each of these differing perspectives may be true for particular applications of design fiction; there are many possible permutations, and these permutations may in fact co-exist.

Although they present some challenges, the dilemmas emerging from ambiguity indicate an overriding interest and excitement about the concept. This accretion of uncertainties indicates that design fiction is, in Kuhnian terms (Kuhn 1962) in a crisis period. Fundamental questions are being raised about "what terms should mean, what kinds of questions are valid to pursue, and what procedures should be used to validate their answers" (Harrison et al. 2011, p.386). The accumulated body of questions may lead to a paradigm shift (as in the transition in physics from Aristotlean, to Newtonian, to Einsteinian is a historical example of this).

It is always challenging, however, to view design in the same terms as science. Sterling addresses this succinctly and directly: "Design is not science." (Sterling, 2005, p. 30). Understanding the implications of how design differs from science, though, is complicated. Gaver discusses the situation in more subtle terms. He offers three views of why the accretion of questions hinting at paradigm shift may not apply directly to design. First, he suggests that design research is "Pre-Paradigmatic" and each application of design in fact builds from early principles. Second is the "Invisibility of Consensus" which challenges the unified appearance of the natural sciences, and suggests that research through design operates within shared paradigms just as much as science does. Lastly, design is cast as a generative endeavour, something that changes the context within which it is working. This is quite different from natural science, where 'the Universe' is usually presumed to be singular, static, and independent. Gaver's point is that, however tempting it is to link up and unite diverging lines of inquiry, as some philosophies of science would suggest is the right thing to do, in terms of doing research through design this may be counter productive. Design theories are "provisional, contingent and aspirational…. convergence may not be the only or best model for progress" (Gaver 2012, pp.941–945). Viewed in this way the accumulation of design fiction ambiguities cannot be usefully addressed through working towards convergence, or through standardisation as facilitated by generalisable theory.

Instead of attempting to resolve these tensions what I propose to do here is to find a means to mitigate them using a 'pragmatics framework'. Pragmatics is a branch of linguistics that focuses on the contextual dependency of meaning in language. In pragmatics it is accepted that theoretical definitions of words and language cannot explicitly encode the meanings of words and sentences; the 'actual' meaning is tied to the context of use and the prior knowledge of those involved in the communication. It should not, perhaps, be surprising, therefore, that precisely defining 'design fiction' is an elusive challenge. The words and constructs used to describe and communicate about design fiction mean different things to different people, depending on context and existing knowledge.

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In the rest of the paper I will describe some frames, or lenses, through which design fiction can be viewed in order to illuminate some of the ambiguities that are inherent in the context and knowledge-dependence of the meanings of its terminology. I do not propose a 'definitive definition', but instead provide common yet flexible terminology to enable us better to describe design fictions. This approach is intended to occupy a happy medium between an over-specification on the one hand (that could constrain rather than assist the further adoption of design fiction (e.g. Gaver, 2012)) and an unchecked divergence (that may cause design fiction to appear too open-ended to be a practical tool in design and research processes).

2 DESIGN FICTION AND RESEARCH

The relationship between design practice and research isn't as straightforward as it might first appear and the case of design fiction this is accentuated by the lack of tangible 'end product' and the practice's overt interest with the future.

Design attempts to depart from existing situations and arrive at preferred ones (Simon 1969, p.111) – in this way *all* design is a future-orientated activity. Looking at the reverse angle of this situation, we can say that it would be impossible to 'design' something that was already in existence: all design looks to the future. *Speculative* design refines this relationship with the future; rather than the design process simply working towards materialisation of a future product or object, the focus shifts towards producing insights about future possibilities (Lukens & DiSalvo 2011). Dunne & Raby note that (speculative) designers should "act as catalysts for public debate and discussion about the kinds of futures people really want" (2013, p.6). Insofar as it produces *insight* rather than *product*, speculative design practice is amongst other things, a research activity. Design fiction is no different and – as well as the envisioning, communication, and inspirational tool referred to by Tanenbaum (2014) – design fiction has been referred to explicitly as a research method (Markussen & Knutz 2013; Grand & Wiedmer 2010). Simply acknowledging that design fiction is a research method, though, does not tell the whole story, and does not take us very far in pursuit of a pragmatics for design fiction. I shall now consider design fiction's relationship with research in some more detail, in particular by appropriating Frayling's (1993) categories for art and design research, and applying them to design fiction.

Frayling's description of research in art and design begins by pointing out the distinction between Research (with a big 'R') and research (with a small 'r'). The former refers to the production of new knowledge, whereas the latter refers to a search for, and collation of, *pre-existing* knowledge. In order to contextualise the problem of further understanding the relationship between reserach and design, Frayling points out that stereotypical views of artists, designers, scientists, and of 'practice' suggest that their activities are completely distinct, when in fact they often overlap and interact "Research is a practice, writing is a practice, doing science is a practice, doing design is a practice, making art is a practice". Frayling concludes that, [among these practices] "There is a lot of common ground. There is also a lot of private territory" (Frayling 1993, p.4). To finish the paper Frayling introduces three categories of design research: research into design, research through design, and research for design. I shall now describe how these categories may be applied to design fiction.

The first category, research into design fiction (big 'R'), represents a pursuit of new knowledge *about* the practice, as opposed to actually *doing* the practice;

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this kind of research is theoretical. There is a variety of work that fits into this category, for instance Grand & Wiedmer (2010) discuss using a design fiction as a method or approach to design research in general; Bleecker explores the practicalities of working with diegetic prototypes, considering them as props, in particular by considering Joseph Franz's Star Fleet Technical Manual as a piece of design fiction (2010); Gonzatto et al. (2013) and Franke (2010) discuss the philosophy of the future and of design fiction, adopting different approaches articulating why speculative design and design fiction are relevant to design today. This type of research begins with pre-existing knowledge as an input, and through a research inquiry – which may or may not intercalate interaction with a design fiction artefact – brand new knowledge is created, finally becoming part of the design fiction corpus.
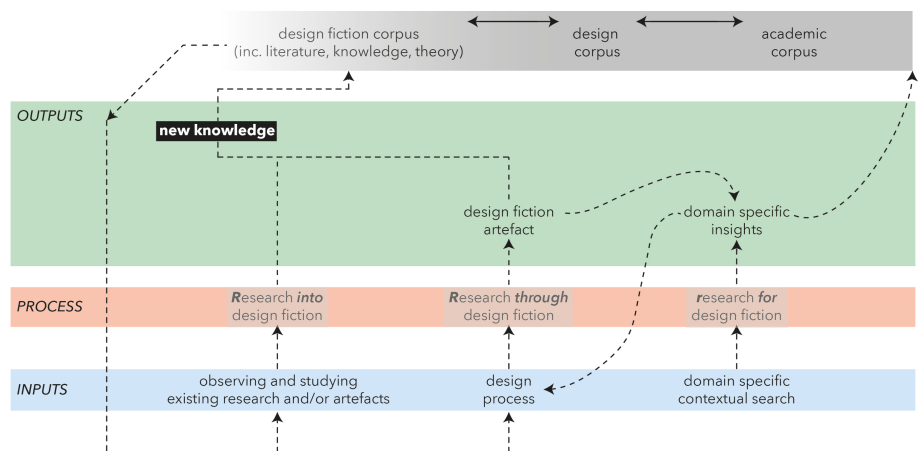

Figure 1. The interrelations between different categories of design fiction research.

The second category, research *through* design fiction (again, big 'R'), refers to the production of knowledge resulting from a design/making process. Discussing the epistemic implications of this category in detail is beyond the scope of this paper and there are differing points of view on how it generates knowledge: Ramirez discusses how research through design can play a part in a triangulated research strategy (2009) while Zimmerman et. al. (2010) and Gaver (2012) consider the pros and cons of developing standards and formal methods for research through design. Regardless of what position you adopt, we can assume that it is possible to produce knowledge by *practising* design fiction. An interesting quirk of design fiction in this mode is that its focus is never a material end product (in contrast to research through *industrial* design, for instance). Because of this, and because design fictions are primarily aimed at producing insights, it is arguable that *any* design fiction practice is by definition a research practice too. Another peculiar property of research through design fiction is that the knowledge and insights produced are invariably relevant to two fields. When a design fiction is created, for instance *A Machine. Learning.* (Lindley & Potts 2014), it addresses particular domain(s) (in this case artificial intelligence and human-computer interaction), and produces insights pertaining to that domain. At the same time, however, the process and resultant artefact(s) can be considered to produce knowledge about design fiction *itself*. In part, this is due to design fiction being in the early stages of its development.

The third of Frayling's categories is research *for* design fiction. Here 'research' refers to a contextual search that is conducted to support the design and production of a design fiction artefact (it is the only category that refers to

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research with a small 'r'). The design fiction piece *A Digital Tomorrow* (Nova & Kwon 2012) was supported by background research of the domain, which stemmed from an ethnographic project called *Curious Rituals* (Nova et al. 2012). *Curious Rituals,* therefore, is an act of research *for* design fiction, although itself it doesn't involve *doing* any design fiction. Consider the inverse situation, design fiction may be practiced in order to produce insights to support some other design practice. One particular method of doing this using ethnographic techniques is described by Lindley et al. (2014).

In summary design fiction has the potential for a multi-dimensional relationship with research. It may be used as a method for simultaneously producing knowledge and insights that pertain to design fiction practice, as well as other domains (research *through* design fiction); and it may be used as a research method as part of a contextual search supporting some other design practice (research for design fiction). Finally design fiction may itself be the subject of an objective inquiry (research into design fiction).

Design fiction's inherent relationship with the future and disinterestedness with materialisation of 'product', means that the practice has an implicit relationship with research of one kind or another. Finally it is worth noting that Frayling's elucidation of the intricate relationships between art, design, science and practice fits well with the variety of accounts of design fiction. Considering design fiction as a "a conflation of design, science fact, and science fiction" (Bleecker 2009, p.6) this should not be surprising, and Frayling's categories may be a particularly useful theoretical foundation for a pragmatics for design fiction. All design fiction relates to research, so these categories allow us to describe, with adequate precision but without undue constraint, what role design fiction may be playing in any given research or design process.

3 DIFFERENT FLAVOURS OF DESIGN FICTION

The range of artefacts that are referred to as design fiction is diverse; this diversity can easily cause confusion. Here I introduce a second frame to help describe what the underlying purpose of considering any particular artefact as a piece of design fiction might be. Sterling's concise definition of design fiction describes it as the "deliberate use of diegetic prototypes to suspend disbelief about change" (2012). This is a useful starting point. Sterling's definition is widely accepted and often cited, and I think it usefully summarises design fiction in a single sentence. It is flexible enough to apply to a plethora of design fiction forms and intentions, yet it has some exclusivity that imports useful conceptual constraints. Suspension of disbelief is a desired effect of design fiction, and it provides a rich means of prototyping futures. The first part of the definition "deliberate use of diegetic prototypes" describes *how* this effect is produced.

The word 'diegetic' is at the heart of this definition, but is itself problematic. "If you aren't a film scholar or a narratologist, you might get hung up on the word diegetic, a term that has its roots in Greek philosophy and narrative theory." (Tanenbaum 2014, p.22). Thankfully, in the design fiction sense of the word, we can use a straightforward interpretation: diegesis refers to the 'world of the story'. A diegetic prototype is a prototype which is presented in a story world. The concept of the 'diegetic prototype' comes from Kirby (2010) and forms a central role in design fiction's foundational rhetoric (e.g. Bleecker 2009; Bleecker 2010). Although in Hollywood diegetic prototypes are employed to help tell the story, Kirby notes their incidental world-shaping power: "In *The Lawnmower Man* (1992) and *Minority Report* (2001), diegetic prototypes of embryonic

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computer-based technologies directly resulted in funding opportunities and the ability to construct real-life prototypes" (2010, p.47). Bleecker describes this phenomenon in terms of fact and fiction swapping properties: diegetic prototypes imbue fictional accounts with facts while also infusing parts of the fiction back into reality (2009). In Hollywood this effect is a by-product of storytelling. As Sterling suggests, however, practitioners of design fiction want to induce it *deliberately* with the intention of suspending disbelief about change.

Design fiction's close tie to science fiction films may encourage the point of view that design fictions are *always* to be encapsulated in film (e.g. Dunne & Raby 2013, p.100). Also, it does appear to be the case that film is a particularly appropriate medium for containing design fictions; it is well suited to articulating a rich context alongside specific prototypes, and most audiences are literate in the language of film (Bleecker 2009; Kirby 2010). However the deliberate use of diegetic prototypes has been applied in many different multi-media assemblages. For instance, the *City Fictions*[1] project crafted urban futures using a combination of existing buildings, sound installations, physical artefacts, and a live tour guide. *TBD Catalog* is a printed catalogue of hundreds of fictional products (Various 2014). The *5th Dimensional Camera* includes elements of sculpture, video, photography, and text (Superflux 2010). There are many other recent examples of design fictions being made and used in research that are not filmic at all, or use mixed media (e.g. Blythe 2014; Lindley & Coulton 2014; Linehan et al. 2014; Markussen & Knutz 2013). Each of these examples, despite taking a variety of forms, deliberately use diegetic prototypes, but they conjure the diegesis in different ways. It is safe to say that design fiction is not medium specific.

Bearing in mind Sterling's definition, Kirby's observations on diegetic prototypes, and the knowledge that design fiction may take a variety of forms, so long as it is engendering a diegesis, we can begin to consider the different kinds of artefact that are referred to as design fiction.

First there are artefacts created by designers who are intentionally practising design fiction. Apart from the common intention (to cause suspense of disbelief through diegesis) behind their production, there are very few properties common to all these kinds of design fiction. Many different ideation strategies may be used to produce them; the form they take is not constrained, and they could feasibly fit into any of the three research categories described above. It is the fact that a designer or researcher *intentionally* elected to cause suspension of disbelief through diegesis, that unites this group. For the sake of referencing, I'll refer to this flavour of design fiction as 'intentional design fiction'. These projects potentially have the most complex relationship with research in that they may interact in terms of all three of the categories described above (potentially at the same time!)

However, there are other types of artefact that may be referred to as design fiction, despite not being created as such, and not having 'design fiction intent'. Consider the films *2001: A Space Odyssey* (1968) and *Minority Report* (2001). These examples are cited when building a theoretical case for design fiction, as they both appear to have caused fact to follow fiction and are used to exemplify

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[1] Please see "Read all about it: City Fictions on cover of Evening News". Available at: http://futureeverything.org/news/city-fictions-in-evening-news/ [Accessed October 30, 2014].

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the power of the diegetic prototype (Bleecker 2009). They appear to use diegesis to cause a suspension of disbelief. If they do that, then we could consider them to be works of design fiction even though they weren't created as such. Looking at these films in terms of the research categories, it seems unlikely that they would be good sites for research through design (not least because film production is usually very secretive). On the other hand there seems to be no substantive reason why they can't form an integral part of research into design fiction: we can study Hollywood films and use them to inform our design fiction practice, for instance taking cues on how is best to construct affecting and believable diegetic prototypes. *Her* (2013) is an example of a recent film that, although created for cultural and entertainment reasons, has been analysed as if it were a design fiction (Lindley et al. 2014; Vanhemert 2014). In some ways, when applied to pre-existing artefacts like this, we can say that design fiction is a 'way of looking'. The artefacts being observed in this way may be referred to as 'incidental design fictions'.

'Visioning films' produced by corporations are sometimes referred to as design fiction, although I would argue they barely represent design fiction at all. Examples of this sort of practice include *Corning: A Day Made of Glass* (2011), Google's *Project Glass: One day…* (2012), and Microsoft's *Future Vision* (2009). It is easy to see why these films have been described as design fictions, because they describe possible futures through filmic depictions. However these works are often "thin", giving "no consideration for the social, political, and economic changes going on around us" (Raford 2012). By not taking account of these factors, arguably the 'prototypes' depicted in these films lose the unique "situated via proxy" quality that emerges from the rich amalgam of action, context and provocation typical of design fiction. (Lindley et al. 2014 p. 247). They are barely diegetic prototypes at all. These artefacts tend not to represent 'the future mundane' (Foster 2013), but instead present a white-walled and dubiously utopian vision of the future. Despite being referred to as design fiction, and on first glance looking rather like design fiction, this type of work does not derive utility through harnessing diegesis in the same way, and certainly does not harbour any of the critical, questioning or exploratory elements that invariably play a part in speculative design and design fiction works (e.g. Dunne & Raby 2013; Foster 2013; Various 2014). I refer to this kind of work 'vapour fiction', alluding to the term 'Vapourware' (see for example Atkinston 2013). It is reasonable, however, to consider vapour fictions as a source of insight for design fiction research: although they tend to lack diegetic texture, they may still be useful stimuli as part of a research *for* design fiction process, and by studying how they contrast with other design fictions we may produce insights by considering them in terms of research into design fiction (i.e. they may offer contributions to theory).

In summary, by looking at the underlying purpose of referring to any given artefact as design fiction, or the purpose of design fiction practice, it becomes clear why the term, without contextual qualification, is so ambiguous. Incidental design fictions (and arguably vapour fictions) are certainly useful to the design fiction community as objects of study. By using design fiction as a conceptual lens, as opposed to practice, incidental and vapour fiction flavours can forge the 'discursive space' that speculative design and design fiction intentionally produce. Furthermore, considering these types of artefact is a reasonable way of developing insights into design fiction theory. *Intentional* design fiction is, however, the most important. It is also the most difficult to pin down, partly because this flavour of design fiction implies practice, which implies potential

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interactions with any or all of the design fiction research categories, and finally because they may adopt a variety of forms.

4 CONCRETE CONCLUSIONS AND MALLEABLE MEANINGS

Design fiction is a young practice and it is clearly in a formative period. Although it is tempting to strive towards a comprehensive universal theory, it seems that this is neither practical nor desirable (in the context of emerging design research practices (Gaver 2012)). Also, in the terms in which I have described it, design fiction is always involved in some kind of research, whether studied from outside in order to create the meta-theory of design fiction, producing knowledge or insights through practising design fiction, or applied in order to contribute to a contextual search for some other design endeavour. As the corpus of design fiction research continues to grow, so will examples of how adaptable design fiction can be. From this corpus practitioners may take inspiration and find a particular approach relevant to their own work; furthermore, published examples may be applied in contexts other than they were originally used.

The two conceptual frames I have described appear to be suitable tools for describing the *majority* of practice and research that makes up the current design fiction corpus. As such they can be used as basic constituent parts of a design fiction pragmatics framework, which can be applied in order to reduce ambiguity and mitigate the complexities of design fiction. For instance these frames can be used to describe how Lindley & Coulton (2014) used design fiction practice, as part of a research through design process, in order to propose a model for discussing how diegesis is constructed, which contributes to meta-theory. The diegetic prototype in that case described a system for producing heat from mining cryptographic currency, which opened a discursive space relevant to that domain as well. This is an *intentional* design fiction. Without the pragmatics framework, explaining the intricacies of that project and removing inherent ambiguities, would take a great deal more time.

I cannot emphasise enough that the research categories and flavours of design fiction described are themselves temporary and undergoing constant evolution. They appear to be useful now, but it is likely that new twists on design fiction practice will require the pragmatics framework to be updated or seriously modified. For the time being, however, I suggest that these perspectives provide the basis for a functional pragmatics framework. This framework can be used to disambiguate 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.

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