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Operationalizing Design Fiction with Anticipatory Ethnography

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Transmuting the entanglement of situations, contexts, artifacts and people, designers mediate the relationship between ‘what could be’ and ‘what is’. All design, then, has an implicit relationship with the future. Latency will always exist as part of this relationship, between the inception of a design concept, development and delivery of that concept, and the manifestation of that concept’s potential impact on the world. As we move further into the heart of the Digital Revolution these periods of latency decrease, whilst the breadth and depth of potential impacts increase. Always an arm’s length away, but with a velocity and mass greater than at any point in history, the momentum of the future today is greater than ever before. This paper describes the practicalities of operationalizing design fiction, using anticipatory ethnography, in order to illuminate and explore the implications of plausible near futures and in doing so allowing designers and their designs to match the velocity of the future before critical impacts occur. By harnessing designers’ speculation can we make the future’s ‘what is’ better than simply ‘what could be’?

The universe of possible worlds is constantly expanding and diversifying thanks to the incessant world-constructing activity of human minds and hands. Literary fiction is probably the most active experimental laboratory of the world-constructing enterprise (Lubomír 1998).

BACKGROUND

Anticipatory ethnography looks at design fiction artifacts (cf. Bleecker 2009; Lindley 2015), and applies ethnographic techniques to them in order to produce actionable insights (Lindley, Sharma, and Potts 2014). Ideally anticipatory ethnography will unbind design ethnography from ties to the present, whilst enhancing design fiction practice with a developed set of analytical methods. This paper includes an introduction to and review of anticipatory ethnography; an account of how we practically approached *doing* anticipatory ethnography; consideration of the insights produced; and reflection on each of these. By illuminating the accessibility and usefulness of anticipatory ethnography we aim to highlight its relevance to both industry and academia, whilst also considering limitations of the approach.

Exploring Anticipatory Ethnography

The foundational properties of design fiction and design ethnography are mutually consistent. By combining these properties in symbiosis, Lindley, Sharma and Potts (2014) named a practice: anticipatory ethnography. This paper builds on that work and puts the

construct to the test practically. In order to make this paper accessible as a standalone piece, here we offer an abridged account of anticipatory ethnography.

Design fiction – Speculative design practices have no direct interest in producing a finished article for production, sale or implementation. These speculative designs aim to challenge assumptions, be critical, and stimulate conversations (cf. Bleecker 2009; Dunne and Raby 2013; Tanenbaum 2014; Lindley and Coulton 2014; Lindley, Sharma, and Potts 2014). Design fiction sits within the taxonomy of speculative design, differentiated from other speculative design practices by its invocation of, and dependence on, ‘diegetic prototypes’ (Kirby, 2010). In the context of design fiction ‘diegetic’ refers to *of diegesis*, and *diegesis* refers to the world within which a story takes place. Hence, a diegetic prototype is a prototype that exists within a ‘story world’. Although other speculative design approaches, for instance critical design, may craft story worlds too, design fictions tend towards doing this with people at the core and with a character of neutrality (as opposed to criticality). In doing so they allow for a discursive space to emerge from the “diegetically situated” designs, people, and environments (Lindley, Sharma, and Potts 2014:246).

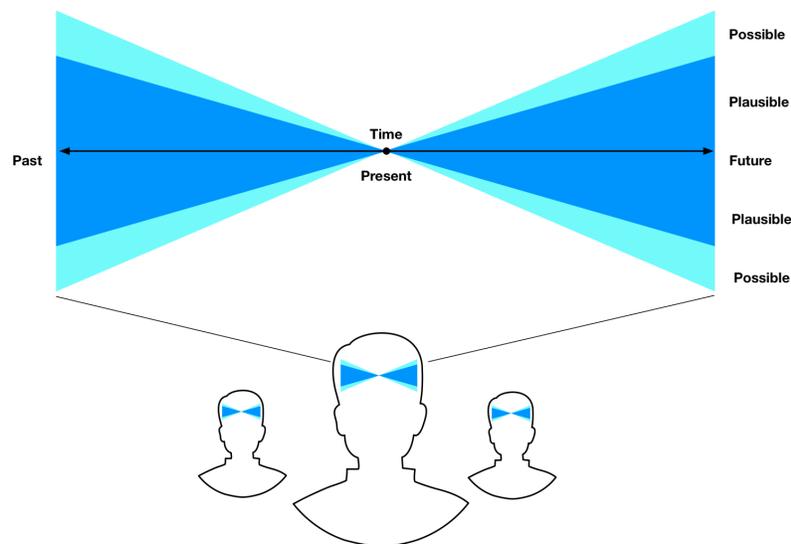


Figure 1. The nature of design fiction’s speculations. This diagram (Coulton, 2015), a descendent of *PPPP* (Dunne & Raby, 2013), which in turn is inspired by Voros’s *Cone of Possibility*, is well suited to describing design fictions. First we see that the entire spectrum of past, present and future possibilities are ‘filtered’ by the people at the center. Second it accepts that there are multiple people each with their own interpretation of the spectrum. Third it gives equal weight to perception of the past; an essential part of how one interprets futures. Fourth, the original spectrum in Voros’s cone included probable, plausible, possible and preferable futures, here it has been refined to a simpler duality of plausible and possible.

Because diegetic prototyping in design fiction naturally creates diegetic situativity, the techniques, methods and intentions of design ethnography are applicable and may be used as a way of analyzing and operationalizing the discursive spaces that design fictions aim to

create. Meanwhile design fiction's inherently speculative character, and focus on the future, offers a site for ethnographic study that is temporally free from ethnography's usual ties to the present.

Design fiction is relatively immature and as a practice is still imbued with methodological uncertainty. Lindley's (2015) 'pragmatics framework' goes some way to mediating the potential confusion inherited by this uncertainty, by proposing three categories which describe the differences between types of artifact that are referred to as design fiction:

1. *Intentional* design fictions – artifacts that are *created* as a design fiction.
2. *Incidental* design fictions – artifacts that can be *interpreted* as a design fiction.
3. *Vapor* fictions – usually marketing materials that *resemble* design fictions.

The pragmatics framework paper considers how design fiction relates to Sir Christopher Frayling's typology for art and design research (1993). The following types of research are considered:

1. Research *for* design – a contextual search intended to support a specific design, research leading up toward an artistic or design endeavor.
2. Research *into* design – studying the theory of design, usually a paper-based activity, not necessarily involving any design or making work, per se.
3. Research *through* design – production of knowledge as a direct result of a design and/or making process.

Lindley reflects on these types of design research vis-à-vis design fiction: "Design fiction's inherent relationship with the future and disinterestedness with materialization of 'product', means that the practice has an implicit relationship with research of one kind or another [...] 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" (2015).

In this paper we explore how anticipatory ethnography can utilize *incidental* design fictions as part of a *research for design* process. In other words our exploration uses a pre-existing artifact, which coincidentally has the same properties as a design fiction, to produce the type of actionable insights that may be useful in a commercial design environment.

Anticipatory ethnography – Anticipatory ethnography emerged from an 'idea-ballet': two distinct practices – design fiction and design ethnography – pirouetting around one another creating the silhouette of a new, and unique, whole. The idea is a conceptual alignment between design ethnography's reconfiguration of traditional ethnography, and design fiction's approach to diegetically prototyping the future using fiction as a medium. There are many synergies between these two distinct practices: stimulating insightful dialogue; supporting design processes; appreciating action and context's symbiotic relationship. If we consider design ethnography's ties to the present (Crabtree, Rouncefield, and Tolmie 2012:170), remember the temporal disinhibition of design fiction (Bleecker 2009), and finally pay regard to the consonance of the properties of each practice (Lindley, Sharma, and Potts 2014), then the value proposition of anticipatory ethnography is complete.

In its original formulation three ‘modes’ of anticipatory ethnography were proposed. Each mode is based on observing a design fiction artifact, but at different phases of its production and/or consumption. The modes involve observations of:

1. The *process* of creating a design fiction.
2. The *audience* of a design fiction interacting with it.
3. The design fiction *itself*.

Mode 3, studying the content of the design fiction itself was, for a variety of reasons, identified as “the most attractive both theoretically and practically speaking” (Lindley, Sharma, and Potts 2014:248). This mode does not require anticipatory ethnographers either to make a design fiction themselves, to gain access to the production of a design fiction, or to interview other people interacting with a design fiction. It relies only on a researcher directly engaging with a design fiction artifact. These characteristics make the third mode the most straightforward.

Why care about the future? – Because the future is so uncertain, how much, if any, design resources should focus on the future? This question is of course highly relevant, but an in-depth exploration of it is beyond the scope of this paper. Briefly, our position is that as technologies become more advanced and the techniques of design and production more refined, the latency between a design idea being conceived and its having the potential to impact upon the world is decreasing. Consider the dramatic adoption of technologies like the web, social networks, and smartphones, for instance. Put metaphorically, a design concept that was prototyped yesterday, may become viable tomorrow and go into production at the weekend. If it might be the next Twitter, iPhone or Reddit, would it not, in spite of all the uncertainties, be imprudent to ignore its potential impact next week? In the words of Andrew Feenberg: “While we are more than ever aware of both the promise and the threat of technological advance, we still lack the intellectual means and political tools for managing progress” (2002).

THE PRACTICALITIES OF DOING AN ANTICIPATORY ETHNOGRAPHY

This section describes the decisions taken and the approaches adopted by the authors in order to move the theoretical construct of anticipatory ethnography toward a practical method that could be replicated. Although this is an academic study, the intention is that this method should be applicable to commercial design processes, either directly or with subtle adaptations. To recapitulate: the scope of this paper is to describe the practicalities of doing an anticipatory ethnography with a piece of *incidental* design fiction, as *research for design* (i.e. to support a design process).

Notes on Incidental Design Fictions

David Kirby, in developing the notion of diegetic prototypes, a concept central to making design fiction work, quotes the Red Hot Chili Peppers, “Space may be the final frontier but it’s made in a Hollywood basement”. The lyric highlights Hollywood film producers’ skill at crafting fictional worlds. Bearing this in mind the incidental design fiction the authors

elected to focus on for this research came from Hollywood. The authors worked with Spike Jonze’s acclaimed 2013 film, *Her*. Watching *Her* would enable the reader to gain a greater insight into this study. Before progressing into further detail about the reason for selecting *Her*, below, the paper will elaborate on what qualifies *Her* as a piece of incidental design fiction.

The most popular definition of design fiction is “the deliberate use of diegetic prototypes to suspend disbelief about change” (Sterling 2012). Lindley, Sharma and Potts comprehensively deconstruct this definition, as it relates to anticipatory ethnography (2014:240–243). Lindley and Coulton offer a paraphrased version “a design fiction is (1) something that creates a story world, (2) has something being prototyped within that story world, (3) does so in order to create a discursive space” (2015). It is easy to see how these definitions apply to *Her*. The movie creates a story world (*Her*’s critical acclaim would suggest it did this successfully). The diegetic prototypes within the story world of *Her* are abundant – some of these will be elaborated on later when we discuss the insights produced. Julian Bleecker, writing on design fiction, notes how these props, and the stories they tell, are so affecting (2010):

“[A] good story with its props may be more effective at materializing an idea than an engineering prototype. We might wonder why more engineers are not drawn to storytelling as a way to prototype their ideas, rather than circuit building or software prototyping. As a means to communicate and disseminate an idea, not much works as well as the circulation of a compelling story. Hollywood and the entertainment-media network has taught us this much, at least.”

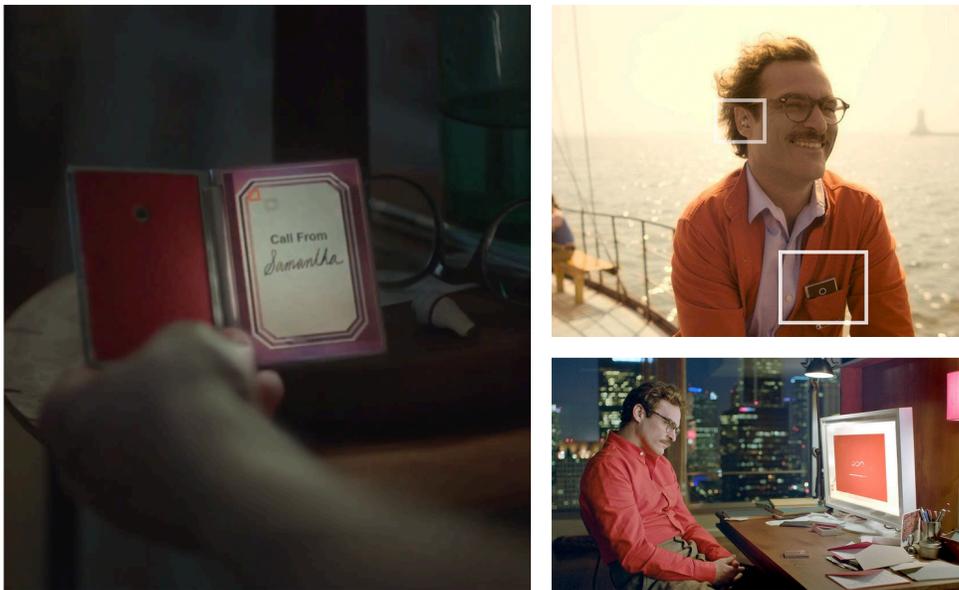


Figure 2. Diegetic prototypes in *Her*. Left we see the portable device that Theodore uses to interact with his operating system, Samantha. Top right we see the same device placed with the camera facing outward so Samantha can see the world, Theodore uses a safety pin to position the device in his

clothing, also highlighted is the ear bud that allows Theodore to hear Samantha speaking in private. To the bottom right we see Theodore ‘installing’ the operating system on a familiar-looking desktop computer.

The third and final property of a design fiction is the creation of a discursive space. This is where Sterling’s definition differs slightly from Lindley and Coulton’s. Sterling simply says that these diegetic prototypes are invoked to suspend disbelief about change (2012). Lindley and Coulton (2015) modify this such that the *reason* for that suspension of disbelief is accounted for: to create a space for discussion (and thus to facilitate the emergence of insights). Any good fiction should, if it is done well, engender some kind of suspension of disbelief: that is what good storytelling does. However when we use that storytelling not solely for its originally intended cultural purpose but *apply* it in design fiction terms, then that suspension of disbelief helps create a discursive space. Putting this point very simply, a good story should act as a stimulus for further conversation.

Looking more closely at the quality and content of the movie itself, *Her* exhibits an affecting diegesis, and, although this is an intrinsically subjective arena, in the opinion of the authors the movie certainly invites a suspension of disbelief about change (cf. Farago 2013; Vanhemet 2014). The film is laden with a range of diegetic prototypes, in fact one of the lead characters – the artificially intelligent software called Samantha – *is* a diegetic prototype herself. Although the artificial intelligence side of the film transcends the usually mundane and everyday quality of design fictions (as well as pushing the limits of plausibility), the other diegetic prototypes are clear extrapolations from today’s technology. Examples include a smartphone-like device, a wireless ear bud/microphone for interacting with the mobile device and electronic services such as online dating, letter writing, and video gaming. The setting of the film too played into our hands, although the interior architecture, external environments and sets are clearly ‘different’ from today, they are not so dissimilar as to prevent the suspension of disbelief. Exterior filming in both Shanghai and Los Angeles helps to create a comfortable but ‘other’ feeling.

While *Her* is *one* good academic test bed for anticipatory ethnography, there is a range of other possibilities. If a design fiction relevant to the ‘thing that is being designed’ exists, it would be apt to work with that resource. For example, *Her*, which features a diegetic prototypes of voice interfaces, would be a logical site for research about that technology, using anticipatory ethnography. Similarly, the movie *Robot & Frank* or the television series *Humans* may be fertile ground for research about robotic appliances, using anticipatory ethnography, as they both feature diegetic prototypes of domestic robots. Where such a relevant design fiction resource *does not* exist, however, the method described here is not viable. The ‘Reflecting on the Method’ section will return to this question and discuss ways in which anticipatory ethnography could be used when a relevant incidental design fiction is not available.

Details of the Method and Deriving Actionable Insights from *Her*

Explaining the *concepts* of anticipatory ethnography and the nuances of design fiction requires significant wordage, in part because of the nascence of each idea and partly because of their novelty. In contrast, describing the *method* is, thankfully, less complicated. The method described here is not the *de facto* anticipatory ethnography method but rather one intended to

test the feasibility of anticipatory ethnography in the simplest way possible – in effect a rapid prototyping of the anticipatory ethnographic method.

A group of four ‘anticipatory ethnographers’ watched *Her* in its entirety. Among the group of four, two were trained design ethnographers, whilst the other two had previously participated in design research. While watching the film verbal dialogue between the researchers was minimal, and post-it notes were used to capture observations of the characters and action. Immediately afterwards the group went through an affinity mapping process (Kawakita 1982) developing themes from the raw observations, and moved toward producing actionable insights. Since this was an academic endeavor, the authors did not have a specific client brief to work towards, and the range of insights produced was incredibly broad. In order to make the account of the produced insights more coherent, the authors have limited what is included in the paper to those insights with the potential for further research exploration. Each category begins with a general note on the space, including some links back to the content in *Her*, and concludes with a list of insights.

Sound, voice and audio interfaces – In design fiction terms, the system that facilitates the character Theodore’s (human) interactions with Samantha (artificial intelligence) is a diegetic prototype of an advanced voice interface. Similar technologies have existed for some time in the form of speech recognition with appropriately programmed responses. More recently applications such as Siri, Google Now, and Microsoft’s Cortana offer pseudo-intelligence voice recognition systems underpinned by big data and ubiquitous connectivity. Despite offering elements that *appear* intelligent, these systems are far from adaptable. Similarly, Bluetooth headsets are a staple for anyone wishing to use their mobile telephone while driving or using their hands. The design provocations contained within the diegetic prototypes in *Her*, however, demonstrate that these interfaces are far from satisfactory (in terms of both function and aesthetics).

Despite the video revolution that we have seen on the web, facilitated by increasing bandwidth and the ease with which video content can be created, the web remains primarily a text-based medium. Other contemporary services like ‘Chat Roulette’ utilize easily available video cameras and bandwidth to connect users on the fly. Meanwhile, internet-telephony is so commonplace that ‘to Skype’ has become a verb. However, a purely voice-based communication has significantly different properties from text-based methods, this looks like a space ripe for development, particularly in terms of interacting with machines.

‘Conversations’ directly with services, digital corporations or platforms, are incredibly rare. Although, as a customer of Amazon, for example, one can easily speak with a person who is working on *behalf* of Amazon, it is rare (or impossible) actually to speak with Amazon *itself*. Whether this possibility would be predicated on artificial intelligence, or on some kind of ‘wizard of Oz’ style deception, the authors feel that there is space for innovation here. If you could have a conversation with Facebook, Twitter, Vine, or LinkedIn, what would you say?

1. Contemporary voice interfaces are unsatisfactory; they are unintuitive, slow down information exchange, and don’t substantively alter the way we interact with computers. Although they attempt to make our interactions more natural, they feel unnatural.

2. Despite inherent issues voice-controlled computers are ubiquitous (Siri, automated answering services, etc).
3. Contemporary smartphone 'Bluetooth headsets' (or ear-buds) are unsatisfactory; their functions are limited, and their use is somewhat stigmatized (i.e., they're 'not cool').
4. The web primarily operates around text-based media, whilst voice is a powerful and evocative medium that remains underrepresented.
5. Systems, machines, servers, and networks do not engage in 'conversation' with their users. Is this an oversight, or due to technological challenges?
6. The gender, voice, and nature of a personified computer or information system, will impact on how it acts in the world and alter the way interactions occur.

Ubiquitous computing applications – Mark Weiser's seminal paper on ubiquitous computing (1991) has had much influence over the last quarter-century, with many aspects of his vision being realized. In terms of ubiquitous computing, the world depicted in *Her* is not dissimilar from our own. There are superficial differences, such as the prevalence of voice interfaces, but the fundamental nature of what the computers are doing is familiar. Wearable technology is a current technology trend, and although we are not suggesting that these insights allow us to predict the future, what we can say is that the wearable technology in *Her* is not significantly more advanced than what we see today, nor is it more commonplace. In fact Theodore uses a low-tech solution making his smart device 'wearable' – a safety pin enables the camera to peek above his shirt pocket, thus allowing Samantha to 'see' the world.

A strikingly useful diegetic prototype function that Samantha fulfills for Theodore is her ability to read, interpret, and intelligently deal with the messages in his email inbox. Email is a primary mode of communication, yet the technology has hardly kept up with the way it is used. Inboxes are frequently confused places featuring promotional emails, crucial information (tickets, flight bookings, etc) alongside work or personal communications. This problem is reflected in the current endeavors of Google, Microsoft and Dropbox; they have all recently launched smarter email management systems. To exemplify the value of a smarter way of managing email, Samantha manages to sort through thousands of messages, saving only those that were funny – that kind of 'qualitative filter' is unavailable in today's systems. Stemming from this insight the authors were led towards consensus around the danger, uncertainty and worry associated with the implications for privacy of a machine being able to understand the content and context of our electronic communications. In the film Theodore is shocked when he realizes Samantha is 'nosey'. Despite his initial shock, however, he adapts quickly, and becomes accustomed to it.

1. 'Wearable technologies' may not be here to stay. In terms of wearable technology the future will look more like yesterday than today.
2. 'Smart email' management applications are a coveted prize.
3. Software that can understand the context of our digital communications raises questions about human/computer privacy (e.g. if my email client *understands* the content of my email, am I still happy to give it access?)

Learning systems, artificial intelligence, cohabiting with technology – These insights demonstrate one challenge with this work: the vast range of 'newness' that one deals with

when considering *Her's* diegetic prototypes. While discussing themes in this category the authors were struck by the ease with which the film opened a vast space for conversation and exploration, including, *inter alia*, issues of gender, sexuality, personification of technology, and the notion of cyber-counseling. In the interests of focus (and because the anticipatory ethnography team generated quite a large number of these insights) the authors have elected only to include those that seemed contemporarily relatable.

Issues around the commercial and ethical implications of licensing and payment for wholly or semi-autonomous computer systems may become an increasingly relevant area for discussion. These were not addressed in *Her* directly - we are not told what Theodore paid for his 'operating system' Samantha, or on what terms he acquired her; however it is safe to assume that if the film's plot became a reality, there would be a backlash against the seller, when the software took it upon itself to 'go somewhere else'. Software and media licensing agreements already strike a chord with these issues; the vast majority of software licenses and user agreements do not grant the user ownership (of, for instance, an iTunes library), but instead amount to a temporary and terminable right of use or access.

On personification of technology the anticipatory ethnographers discussed the human tendency to personify things; animals, vehicles, and technology for instance. The insights suggest a more complex relationship will emerge if and when technology can act more autonomously and if it comes to possess more human characteristics.

1. Given our propensity to 'nurture' unintelligent computer systems (e.g. Tamagotchis) it may be likely that 'raising' an artificial intelligence could start as a game but become more serious quite quickly.
2. Considering the commercial, and ethical implications for the creators of artificial intelligences, should artificial intelligence be offered on a license basis, as a service, or as a one-off purchase? If one 'raises' a self-adapting system, who 'owns' the adaptations?
3. It is likely that as computer systems become more human-like and potentially intelligent, through their personification, virtual gender roles will mirror 'real' gender roles.
4. We personify objects; we personify animals. What are the ethical implications of personifying thinking machines? Do these potential technological innovations force us to consider notions of 'ethical personification'?
5. Artificial intelligence is unlikely to change how we are in the world, our ontology. We will still have some kind of feelings, emotions, desires, cognitive biases, etc.
6. In the same way that stigma attached to online dating has drastically decreased as web users have increased, it is likely that the stigma toward 'loving' a machine will decrease as instances of the phenomenon increase.
7. In counseling, or other emotive environments, the 'human touch', particularly the physical aspect, is a unique factor.
8. Objects or technologies with 'personality' may encourage more attachment, and move away from consumerism and 'disposable society'.
9. Artificially intelligent technologies will likely shape us, as much as we shape them, but that is not substantively different from our existing technologies. Nevertheless, intelligent technology is likely to shape us in unpredictable ways, and much quicker than happens currently.

10. Autonomous ‘smart’ technologies may challenge our moral and legal perceptions of ownership or possession. If a device can autonomously decide to say “Please don’t turn me off” or “I don’t like you”, does that mean that we are no longer the ‘master’ of it? Is artificial intelligence trafficking or abuse a concern?
11. If technology can decide to leave us, will we need to develop strategies to persuade it to stay?

The diegesis at large and the world today – Theodore frequently goes out of the house and uses his mobile computer to show Samantha the world (by way of a camera in the device). Today this kind of behavior is often frowned upon when the technology is covert or unexpected. *Her* suggests that fear and adverse opinions related to wearable smart devices will reduce in the near future.

When outdoors it was obvious that the majority of other passersby on the street (not the main characters) were interacting via their mobile devices (and maybe *with* their mobile devices) this was exclusively done with voice interfaces. Hardly anyone was holding their device in their hand.

With the exception of the observation pertaining to ‘handless’ operation of devices by the general public, we view this group of insights to be as challenging as insights into and raised by artificial intelligence. They are difficult to equate to believable contemporary action, but we have included them not just for completeness, but, also because in their own right these insights are interesting, even if unwieldy.

REFLECTIONS AND NEXT STEPS FOR ANTICIPATORY ETHNOGRAPHY

To conclude this paper we offer some *reflections* on the method and process, the quality and content of the insights generated. Based upon these factors we intend to illuminate both the potentials and limiting factors for anticipatory ethnography, in industry, and in academic contexts.

Reflecting on the Method

This simple method - a group of researchers watching an incidental design fiction, recording diegetically situated observations on post-it notes, and developing themes and insights via an affinity mapping process - was productive. The synthesis and analysis method was accessible to people unfamiliar with anticipatory ethnography. However, without a specific brief to pursue, the process did meander into many, perhaps too many, different domains. It is noteworthy that majority of the observations made, from all participating researchers, were actually made within the first 15 minutes of the movie. This made us consider creating abridged versions of incidental design fictions.

The authors cannot account for situations where a relevant design fiction does *not* exist, but where the temporally unbounded character of anticipatory ethnography might be desirable. This paper does, however, offer some (as yet untested) alternative ways of invoking anticipatory ethnography.

The *Sans Duty* project (Duggan and Lindley 2015), which explores the future of taxation, used an *intentional* design fiction as a stimulus to provoke reactions from members of a community. These reactions were captured on video, and then edited into a ‘fictional

documentary’, which was in turn used to stimulate further discussion amongst the community and generate insight. Iterating the *production* of design fiction, consultation with stakeholders, incorporation of stakeholders’ insights into new design fictions, provides an opportunity to do anticipatory ethnography where a relevant incidental design fiction is not available by using the other modes of anticipatory ethnography. This is a different type of proposition to the study described in this paper which, deserves further consideration in its own right.

Does Anticipatory Ethnography Produce Actionable Insights?

Anticipatory ethnography *should* nurture and produce actionable insights applicable to plausible futures. The previous section detailed some such insights that emerged from a very quick application of a prototypical approach to anticipatory ethnography. Although the insights produced were undoubtedly interesting, and in some cases quite clearly ‘actionable’, some of these insights had an entirely different feeling or flavor to what we might expect. It is not surprising that some of the insights produced feel strange and unsettling, when one considers that they are derived from unreal characters, existing only in a contrived world, which contains technologies and phenomena, with which we are unfamiliar. In this anticipatory ethnography of *Her* it was, in particular, the broader societal insights, and those pertaining to artificial intelligence that had this peculiar flavor. One can assume that the odd taste is a product of the futurity of the source material and our inability, from our present perspective, properly to comprehend cohabiting with some of the diegetic prototypes depicted.

The authors tentatively refer to these strange inklings of insight as ‘plausible out-sights’, as opposed to actionable insights. The word ‘out-sight’ is related to ‘insight’, but incorporates an externality, which is relevant because of the ‘otherness’ associated with these findings. The plausible element simply refers to the believability, yet contingency, which is inherited through the suspension of disbelief. These plausible out-sights would be, if considered *solely* within the diegesis of the design fiction, ‘insights’. However when viewed from *our* reality, they are external. This does not necessarily mean irrelevant, but they certainly have a different character from the actionable insights originally sought by the authors. Here are two illustrative examples: the findings that pertain to email management software are straightforward actionable insights. On the other hand, the findings related to loving technology and notions of ownership vis-à-vis artificially intelligent machines fall into the plausible out-sight category. The plausible out-sights generated by the anticipatory ethnography method, seem to reflect the ‘complete’ nature of design fiction prototypes. Design fictions provide visualized use case scenarios, personae, and user journeys all at once, and the fruits of these factors are interrelated; situated.

Strengths, Weaknesses and Next Steps

Our account of operationalizing design fiction with anticipatory ethnography provides some grounds for optimism: the method worked well, it generated interesting insights, and, as was suggested in the peer reviews for this work, there is some significant potential in future-oriented research-for-design approaches. It is, however, clear that despite the generally positive outlook many questions remain. The most significant challenge is how reliably to

transform the novelty and excitement of the approach into real-world tangible results. To reiterate: a question that arose at EPIC 2014: *can you bill clients for this?*

Apart from the more general problems anticipatory ethnography, the most obvious limitation of this *particular* technique is the fact it is possible only when relevant incidental design fiction material is available. There *may* be a way of avoiding this through developing other modes of anticipatory ethnography. Additionally it is true that science fiction (whether written or in film) consistently describes possible (and plausible) futures - a realization which is fundamental to design fiction in the first place (cf. Bleecker 2009; Kirby 2010; Dourish and Bell 2014).

One criticism which has arisen in discussion is that the insights set out here derived from *Her*, were obvious, no-brainers. Hence we ask the question, are the insights generated useful or relevant? If they are *not*, is it because of a fundamental flaw in the concept, a problem with the source material, or perhaps a shortcoming of the research approach or the researchers?

On a more methodological and practical level the authors are keen to explore using more sophisticated data collection and analysis approaches (as opposed to just post-it notes and affinity mapping) and to conduct a longer anticipatory ethnography that bridges across multiple design fictions. The substantive query is, when (or if) will we see the first product, service or system, whose design stems from insights derived from an anticipatory ethnography?

To conclude the paper it seems fair to acknowledge that elements of this approach have, and continue to exist in the world already. David Kirby's work on diegetic prototypes (Kirby 2011) is just one demonstration of how Hollywood's output impacts upon the world. Bleecker's much-cited essay (2009) explores the interplay between fact and fiction, from a design-led perspective. Dourish and Bell (2014) consider using fiction as a means to shed light on academic research. Meanwhile design researchers the world over employ a myriad of workshop techniques and stimuli to generate insights to aid in design processes. The list of related approaches could go on. Anticipatory ethnography though, by standing on the academic shoulders design ethnography, facilitates a well bounded, terse, and straightforward way of *operationalizing* the potential for design fiction speculations.

NOTES

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