
A Machine. Learning: An example of HCI Prototyping With Design Fiction

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Abstract

This video - *A Machine. Learning* - adopts a 'research through design' approach [4] to producing a design fiction prototype [2,7]. By using a research through design approach that is grounded in the practical experience of creating a design fiction we contribute practical insights about the process of creating a design fiction for HCI. Reflecting on the production of the video we explore challenges and opportunities presented by the design fiction method when it is applied to near-future HCI scenarios. The video depicts the story of Manu and his new artificially intelligent portable device. In the paper we consider the video, using it as a means to contrast design fiction with other approaches to prototyping; we describe the story, content and style of the video; finally we reflect on the production of the video (writing, filming and editing processes) in order to offer practical insights to the HCI community, with regards to prototyping using design fiction and film.

Author Keywords

Design fiction; prototyping; artificial intelligence; near futures.

ACM Classification Keywords

H5.2 [Information interfaces and presentation]: User Interfaces. – Prototyping

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Design Fiction: A Prototypical Approach

Prototyping is a crucial tool in HCI research [5,11] allowing researchers, designers and the community in general, to touch and interact with concepts before they're put into full production. Design fiction is a prototyping technique that is specifically tailored to facilitating conversations about near futures [2] in order to understand where the 'preferable' sits within the gamut of possible futures [3]. Design fiction is not a complete stranger to the HCI community [1,10,12,14,15] and various publications have considered ways in which the concepts and philosophy of design fiction can be applied in a HCI research context.

Emerging from the realization that science fiction has an uncanny ability to 'diegetically' [2,7] prototype new technologies, design fictions derive much of their value from developing a strong 'diegesis'. We refer to diegesis as the 'world of the story'. To work effectively in a design fiction context, the diegesis must simultaneously be relatable to the reality of the audience, but also must build a fictional-substrate upon which the design provocation or new technology being prototyped can reside believably. It is this consideration for, and reliance on, this 'interior view of a story world' that sets design fiction apart from other approaches and lends it unique affordances. Although certainly related to design fictions, video, lo-fi, and paper prototyping, et cetera, do not have this sensitivity for diegesis. It is the diegetic kernel that makes design fiction unique; a considered relationship with a design fiction's diegesis can assist in building and understanding compelling design fiction prototypes [8,9].

Design fiction sits within a larger group of 'speculative' design practices. All prototypes aim to uncover previously unknown insights about a concept or idea [6]. However, speculative approaches to design and prototyping generate these insights in a subtly different way to other approaches. Where most design and prototyping are involved an 'up and to the right' [2] relationship with 'existing and preferred' situations [13], speculative approaches acknowledge and work in full acceptance of the plurality of the future. Speculative design, prototypes, and design fictions only exist to provide the provocation necessary to forge a 'discursive space'. It is from that discursive space that design insights emerge.

Commentary on *A Machine. Learning.*

Our video tells the story of Manu and his new, artificially intelligent mobile device (responding critically to Spike Jonze's 2013 film, *Her*). The narrator in the story is the voice of the device itself. We chose to explore the perspective of the device, as opposed to voicing our human characters, in order to invite the audience into the world of a computer that is capable of contextual learning with subtlety, and thus allowing space for heuristic interpretation.

The style of the video is deliberately plain and doesn't use any computer-generated imagery so that the audience's interpretations of the world depicted remain unadulterated. The set of the film is in fact a working studio, and was not 'dressed' to appear futuristic. Hence, our diegetic world is intended to look like today's real world. This ideology is in fact extended into how the device is represented physically in the film. We elected to include something that is similar to present-day mobile devices in form factor, although in actuality

it is very different (or you may say, *making the familiar strange and the strange, familiar*¹). All these choices were intended to improve how *relatable* the film is to contemporary audiences. We see the 'relatability' of design fictions to be directly related to their use of 'mundanity'.²

The narrative leads the audience through the process of Manu becoming acquainted to his new device. We demonstrate a security feature that is based upon a user's personal electromagnetic signature and allows only that user to view the device (or for a friend to view the device if they're in physical contact with the primary user)³. Next we see Manu, a dressmaker, in his studio. In this scene the device's narration explains how it is an intelligent learning machine. The concept of a 'red dot' is introduced. The red dot, in past paradigms was semiotically used to represent the 'record' function. In our diegesis the red dot has been appropriated and applied to artificially intelligent learning machines, it indicates that you want a machine to learn about what you are doing; we consider this 'recording of meaning'.

As Manu continues his normal activities in the studio, we introduce the concept 'mechanical imperfection', how the machine's learning may be imperfect, it can make mistakes. The device confuses the physical action

¹ Attribution for this quote is unclear, we are referring to Noah Raford's writing on <http://noahraford.com/?p=1625> (who himself refers to Stewart Brand).

² See Nick Foster's blogs on "The Future Mundane": http://www.core77.com/blog/columns/the_future_mundane_25678.asp

³ Although used to strengthen the diegesis of the video, this feature - in its own right - begins to prototype 'interaction driven intimacy'.

of sewing with the physical act of massage. The machine's belief that Manu is *massaging* rather than sewing is confounded by the fact his shopping list includes 'massage oil'.

We dedicate a scene to demonstrating how the device may pick up on visible emotional cues (for instance facial expressions) and may correlate these with actions in the digital world to make inferences. We deliberately keep this scene basic. Although our depiction is basic, we believe that this simplicity does not detract from the film's ability to open a discursive space.

Our closing scenes primarily serve to conclude the narrative and enrich the diegesis. Firstly we show Manu accidentally breaking his device. Although the form is broken, the intelligence, data, and computation *persist*. Finally, we see Manu placing parts of his device into a homemade sewn bag. He dates the bag, indicating to the audience that the video is set 10 years into the future.

Reflections on the Production

By attempting to build a discursive space with design fiction, assumptions and design constraints are removed, and the form of the prototype reimaged. This is especially when trying to roadmap towards a space in the future that is socially and emotionally centered. Establishing a rich diegesis actually drove the concepts within the film. By not allowing technical considerations to interfere with the discursive space, the film creates a freeness to consider the real implications of living alongside a computer that learns, has no fixed form, matures, emerges and is unpredictable. By doing so we aim to challenge assumptions about what we use computation for and

how we spend time with it, instead we emphasize our (future) role in teaching computers meaning by 'showing' contextually rich activities.

This film questions the nature and aims of human computer *relationships*, and how interactions can underpin these relationships. Employing design fiction techniques we can act to shape technical and creative direction, unfettered by an obdurate tie to existing technical paradigms. We posit design fiction as a means of enriching HCI design processes, both by generating new concepts and by exploring the 'diegetic texture' of possible futures. Design fiction, although compelling, has a relatively undeveloped methodological underpinning, as such we call upon the HCI community to critique, explore, and experiment with design fiction as a prototyping tool.

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References

- [1] Bannon, L. Reimagining HCI: toward a more human-centered perspective. *interactions*, (2011), 50–57.
- [2] Bleecker, J. Design Fiction: A short essay on design, science, fact and fiction. *Near Future Laboratory*, March (2009).
- [3] Dunne, A. and Raby, F. *Speculative Everything*. The MIT Press, London, 2013.
- [4] Frayling, C. Research in Art and Design. *Royal College of Art Research Papers 1*, 1 (1993), 1–9.
- [5] Houde, S. and Hill, C. What do prototypes prototype? In *Handbook of human-computer interaction*. 1997, 367–381.
- [6] Kelley, T. Prototyping is the shorthand of innovation. *Design Management Journal (Former Series)*, 617 (2001).
- [7] Kirby, D. The Future is Now: Diegetic Prototypes and the Role of Popular Films in Generating Real-world Technological Development. *Social Studies of Science* 40, 2010, 41–70.
- [8] Lindley, J. and Coulton, P. Modelling Design Fiction : What's The Story? *StoryStorm Workshop at ACM Designing Interactive Systems*, (2014).
- [9] Lindley, J., Sharma, D., and Potts, R. Anticipatory Ethnography: Design fiction as an input to design ethnography (In press). *Ethnographic Praxis in Industry Conference*, (2014).
- [10] Markussen, T. and Knutz, E. The poetics of design fiction. *Proceedings of the 6th International Conference on Designing Pleasurable Products and Interfaces - DPPI '13*, (2013), 231.
- [11] Memmel, T., Gundelsweiler, F., and Reiterer, H. Agile human-centered software engineering. *Proceedings of the 21st British HCI Group Annual Conference on People and Computers*, (2007)
- [12] Reeves, S. Envisioning ubiquitous computing. *Proceedings of CHI*, (2012), 1573–1582.
- [13] Simon, H.A. *The sciences of the artificial*. The MIT Press, 1969.
- [14] Tanenbaum, J., Tanenbaum, K., and Wakkary, R. Steampunk as design fiction. *Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems - CHI*, (2012), 1583.
- [15] Tanenbaum, J.G., Williams, A.M., Desjardins, A., and Tanenbaum, K. Democratizing Technology : Pleasure , Utility and Expressiveness in DIY and Maker Practice. (2013), 2603–2612.