Research Fiction and Thought Experiments in Design

Other titles in Foundations and Trends® in Human-Computer Interaction

HCI's Making Agendas
Jeffrey Bardzell, Shaowen Bardzell, Cindy Lin, Silvia Lindtner and Austin Toombs
ISBN: 978-1-68083-372-0

A Survey of Value Sensitive Design Methods
Batya Friedman, David G. Hendry and Alan Borning
ISBN: 978-1-68083-290-7

Communicating Personal Genomic Information to Non-experts: A New Frontier for Human-Computer Interaction
Orit Shaer, Oded Nov, Lauren Westendorf and Madeleine Ball
ISBN: 978-1-68083-254-9

Personal Fabrication
Patrick Baudisch and Stefanie Mueller
ISBN: 978-1-68083-258-7

Canine-Centered Computing
Larry Freil, Ceara Byrne, Giancarlo Valentin, Clint Zeagler, David Roberts, Thad Starner and Melody Jackson
ISBN: 978-1-68083-244-0

Exertion Games
Florian Mueller, Rohit Ashok Khot, Kathrin Gerling and Regan Mandryk
ISBN: 978-1-68083-202-0

Research Fiction and Thought Experiments in Design

Mark Blythe
School of Design, Northumbria University, UK,
mark.blythe@northumbria.ac.uk

Enrique Encinas
School of Design, Northumbria University, UK,
enrique.encinas@northumbria.ac.uk

now
the essence of knowledge
Boston — Delft

Foundations and Trends® in Human-Computer Interaction

Published, sold and distributed by:
now Publishers Inc.
PO Box 1024
Hanover, MA 02339
United States
Tel. +1-781-985-4510
www.nowpublishers.com
sales@nowpublishers.com

Outside North America:
now Publishers Inc.
PO Box 179
2600 AD Delft
The Netherlands
Tel. +31-6-51115274

The preferred citation for this publication is

M. Blythe and E. Encinas. *Research Fiction and Thought Experiments in Design.* Foundations and Trends® in Human-Computer Interaction, vol. 12, no. 1, pp. 1–105, 2018.

ISBN: 978-1-68083-419-2

Foundations and Trends® in Human-Computer Interaction
Volume 12, Issue 1, 2018

Editorial Board

Editorial Scope

Topics

Foundations and Trends® in Human-Computer Interaction publishes survey and tutorial articles in the following topics:

- History of the research community
- Theory
- Technology
- Computer Supported Cooperative Work
- Interdisciplinary influence
- Advanced topics and trends

Information for Librarians

Foundations and Trends® in Human-Computer Interaction, 2018, Volume 12, 4 issues. ISSN paper version 1551-3955. ISSN online version 1551-3963. Also available as a combined paper and online subscription.

Contents

Research Fiction and Thought Experiments in Design

Mark Blythe[1] and Enrique Encinas[2]

[1]*School of Design, Northumbria University, UK; mark.blythe@northumbria.ac.uk*
[2]*School of Design, Northumbria University, UK; enrique.encinas@northumbria.ac.uk*

ABSTRACT

Any design process involves an imaginative act, a picturing of the world as other than it is. Fiction has long played a part in design research in the form of scenarios, personas, sketches, paper-based prototypes, simulations, prototypes and speculative design. The term "design fiction" has been adopted to describe more elaborate and detailed representations of products and services that do not exist yet. Design fiction is an emerging practice and there are several competing definitions and forms. This article traces design fiction from the Italian radical design of the 1960s through British Art Schools in the late 1990s to contemporary adaptations of the practice by companies like Google, Microsoft and Facebook. Design fiction is now produced regularly by individuals launching Kickstarter campaigns, corporations selling visions of future products and governments imagining new digital services. But there is little agreement about the status of such fictions: what constitutes a good fiction? How does fiction relate to research? In what sense does fiction contribute to existing knowledge? Although fiction can sometimes result in accurate prediction this is not its

Mark Blythe and Enrique Encinas (2018), "Research Fiction and Thought Experiments in Design", Foundations and Trends® in Human-Computer Interaction: Vol. 12, No. 1, pp 1–105. DOI: 10.1561/1100000070.

main value. It is rather the creation of ambiguous artefacts that help us think carefully about emerging technologies and their potential impact. Although fiction may seem to be the antithesis of empirical enquiry it is often employed in the form of "thought experiments" in Physics, Mathematics, Ethics and Philosophy. This article argues that design fiction can also be considered as a form of thought experiment. Excerpts from a fictional Wikipedia article about Valdis Ozols, a Latvian historian and author writing design fiction in the 1940s precede each section as think pieces about the nature and value of fiction. The text is illustrated with pages from a fictional design workbook written in an invented language.

1

The Rise of Design Fiction

Valdis Ozols has been described as the Father of Design Fiction, a 2017 Wikipedia entry is reproduced here in three parts at the beginning of each subsection of this article to illustrate some of the problems around the creation and criticism of design fiction.

Full text available at: http://dx.doi.org/10.1561/1100000070

Valdis Ozols (1905–1998)

Valdis Ozols (April 7th 1905 - February 9th 1998) was a Latvian Historian and science fiction writer. His historical work is now primarily studied as Soviet propaganda but there has been a revival of interest in his science fiction, which is now sometimes categorised as design fiction.

Contents [edit]

Life and Career [edit]

Ozols spent much of his working life as a Lecturer at the University of Latvia. He wrote two modern histories of Latvia dealing primarily with the Soviet occupation of Latvia. *The Latvian Experience of Soviet Democracy* (1945) is a pro Stalinist account of the early years of the occupation. The book is based largely on official

Communist Party hagiographies of Stalin and is for the most part unremarkable but it was republished in the nineteen nineties as part of the *Reading Propaganda* series [citation needed]. The book ensured Ozols' position at the University of Latvia when it became a standard text in the national curriculum for modern history. His second book appeared four years later offering an account of everyday life: *Soviet Latvia Today and Tomorrow* (1949). Again it was a largely uncritical account of Soviet policy in the region, taking a conservative line against nascent organisations like the Popular Front of Latvia (Tautas Fronte). This book has also been reissued as part of the *Reading Propaganda* series but it is no longer regarded as history.

During his academic career Ozols published several short stories under different pseudonyms. Latvian fiction was strictly censored during the Soviet occupation and Ozols tried only once to publish under his own name. His experience with the censors and the University's bureaucracy was such that he decided never again to publish in Latvia and had his work translated for submission to various editors in Eastern Europe. He had most success with Polish publications in the nineteen fifties during the de-Stalinisation period when there was a great increase in freedom of expression [citation needed]. Several of his short stories took the form of academic papers and reports from fictional technology conferences. Some literary critics now believe that they influenced the work of the Polish science fiction writer Stanislav Lem in books like The Futurological Congress (1971) [citation needed]. In his later years Ozols complained bitterly that Lem had stolen his ideas and sought legal advice about suing him [citation needed]. Intellectual Property was a

recurring theme in Ozol's work. One of his fake academic reports describes the development of a music machine which combines musical tones, times and tempos to simultaneously create and copyright billions of tunes. This story *Infinite Music (1940)* describes the total demise of the phonographic industry when an American corporation declares any possible future melody to be its intellectual property and copyright protected for a period of seventy-five years.

Although Ozols assiduously pursued a strict Communist party line in his academic work he became the victim of a purge in the university in the late nineteen forties. He was denounced as an American spy by his wife Iveta [see Ozols' Personal Life] but the Ozols scholar Inga Baldois, has argued that he may also have been identified as the author of some "counter revolutionary" short stories. After losing his job at the University Ozols disappeared and all records of his service in post were destroyed. His books were expunged from the curricula and any reference to them was removed from subsequent academic and administrative work. Ozols officially ceased to exist and soon after this the man himself disappeared. Some believe he was executed but Baldois claims that he fled the country and continued to publish short stories under pseudonyms.

Ozols' Rediscovery [edit]

Ozols' fictional work was almost entirely forgotten until a copy of Ozols' self published book Technopedija was discovered in 1989 by Inga Baldois, a postgraduate researcher in Computer Science at Riga Stradins University. Inga came across a copy of the book in a storage space

she had rented. It was Inga who identified the retroactive importance of the work and began to publish English translations online. She pursued Ozols' fiction through obscure East European magazines and the list of stories in this Wikipedia article is mainly based on her research.

In 1993 Baldois claimed to have contacted Ozols and carried out an interview with him. He is evasive in most of his answers, especially about Soviet era Latvia and the charge that he denounced many people including his wife, her lover and the Head of Department; but the interview contains a section on design fiction which has been referred to as one of its earliest definitions:

Baldois: Do you consider yourself to be a science fiction writer?

Ozols: No, I never liked that term. For me this is bug eyed aliens and zap guns. I saw my fiction as an extension of history. Historians take fragments we find in the present and try to reconstruct the past, writers of future fiction do exactly the same thing but they are looking in the other direction, no? This has nothing to do with science but then, heh heh, history has nothing to do with science either. You might call it Engineering Fiction, you might call it Design fiction, It is about the choices we make and what those choices might mean. It is based not only on technological plausibility but also historical precedent.

(Balodis June 1993)

Baldois was accused of forging the interview and received a number of online threats that were taken seriously by Riga's police. She took the transcript offline and has since left academic life and ungoogled herself, adding further support to those who argue that Ozols never existed [citation needed]. In 2017 she contacted Mark Blythe, an academic with an interest in design fiction, and told him her story under condition that her current location remain strictly confidential.

(Valdis Ozols: Wikipedia. Last Retrieved 18.02.2018)

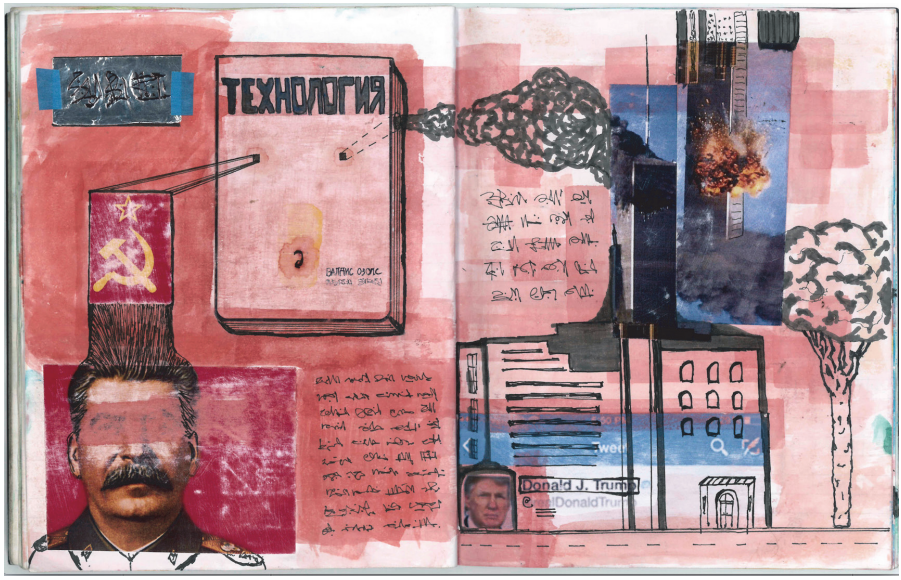

Figure 1.1: Valdis Ozols

Valdis Ozols is a fictional author but his imaginary biography raises questions around the emerging practice of design fiction. What if such a writer had existed? What would design fiction in the nineteen forties have looked like? What use would it have been? Valdis is a kind of thought experiment about design fiction and his story is threaded through this article in the form of extracts from a fake Wikipedia page, along with pages from an "imaginary design workbook" like the one in Figure 1.1.

Science fiction has always been somewhat disreputable. JG Ballard characterised mid twentieth century sci fi as "planet yarns" with "an American imperium colonising the entire universe which they turned into a cheerful, optimistic hell, a 1950s American suburb paved with good intentions and populated by Avon ladies in spacesuits" (Ballard, 2008). In the sixties writers like Harlan Ellison and Robert Heinlein attempted to rebrand their work as "speculative fiction" to indicate a more serious and science based approach. Nevertheless one of the greatest writers of the genre, Kurt

Vonnegut, continued to complain that his work had been put into a "file drawer marked science fiction" which he wanted to get out of because so many critics mistook it "for a urinal" (Vonnegut, 2007) Some critics have taken science fiction as seriously as any other form of literature, Frederic Jameson, for example described Philip K Dick as the Shakespeare of the genre and wrote a book length treatment of his work (Jameson, 2007). But technology developers have always recognised the value of this kind of writing. The earliest science fiction writers like HG Wells had an immediate influence on contemporary engineers and designers. The history of computing technology has been in part shaped by popular science fiction shows and film.

There has also been a long running if sporadic engagement between HCI academics and science fiction. In a comprehensive review Elisabeth Buie points out that "HCI has engaged with SF since at least 1992 when a CHI conference panel of HCI researchers and SF writers (Marcus *et al.*, 1992) discussed SF and HCI" (Buie, 2018). The panellists at this event included Don Norman and Bruce Sterling and the event aimed to explore "future user interfaces, their technology support, and their social context" (Marcus *et al.*, 1992). A decade later a CHI keynote was given by the The Hugo award winning science fiction writer David Brin. The future dystopias depicted in Anthony Burgess' Clockwork Orange and of Orwell's 1984 were pastiched for scenarios exploring emerging surveillance technologies in 2004 (Blythe *et al.*, 2004). In 2011 a futurist at the Intel Corporation, David Brian Johnson, was characterising short stories, movies and comics as "SF prototypes" and positioning SF explicitly as a step in the development process (Johnson, 2011). In 2014 Bauman and colleagues imagined the CHI conference of 2039 through fictional abstracts to consider the "various visions guiding work in HCI" (Eric *et al.*, 2014). In the same year a paper called *Research Through Design Fiction* described "imaginary abstracts" that were not visions of the future but rather pastiches of contemporary Research Through Design projects; this paper went so far as to argue that fictional studies of prototypes might serve as a useful alternative to actually building them (Blythe, 2014a).

Although the relationship between science fiction and technology research is as old as either field the term "design fiction" seems to have caught the imagination in academia and industry alike. There is some confusion over where the term "design fiction" originates. It is sometimes attributed to Bruce Sterling's 2005 book *Shaping Things* (Sterling, 2005) and Julian Bleecker's 2009 short essay on Design Fiction (Bleecker, 2009). Sterling himself attributes the invention of the term to Bleecker (Sterling, 2013b) but there are earlier uses of the phrase. The first instance that Buie (Buie, 2018) finds occurs in a 2003 paper by Alex Milton, who was then working for the school of Design and Media Arts at Napier University. Milton's paper (2003) is written as a script for a documentary and features commentary on Noam Toran's *Accessories for lonely men* (Toran, 2001) a series of provocative objects designed to comfort and console men who were suddenly single and missing their former partners. This included a "sheet thief" which slowly winds a sheet off the sleeper (see Figure 1.2) and a "heavy breather" speaker which played the sound of someone's breath near a pillow. Toran also made a film called *Objects for Lonely Men* which was a black and white short film featuring a man so obsessed by a Jean Luc Godard movie that he has a tray of props to use while watching it. The props include a gun used in one of the scenes and a plastic head of an actress in the film.

Alex Milton declares that Toran's work has:

> "begun to explore the realms of design fiction through the medium of props and pseudo documentaries. Ron Arad suggests that 'Noam tends to develop fictional histories for his objects, deceitfully creating individuals and inventions as if they already existed and he merely discovered them.' (Milton, 2003)

It is more than likely that the words "design" and "fiction" collided in any number of texts before this one, however Milton uses the term more or less as it is used today. The designer whose work is described in in this way studied for an MA at the Royal College of Art between 1999 and 2001 at the time that Antony Dunne and Fiona Raby were teaching "critical design".

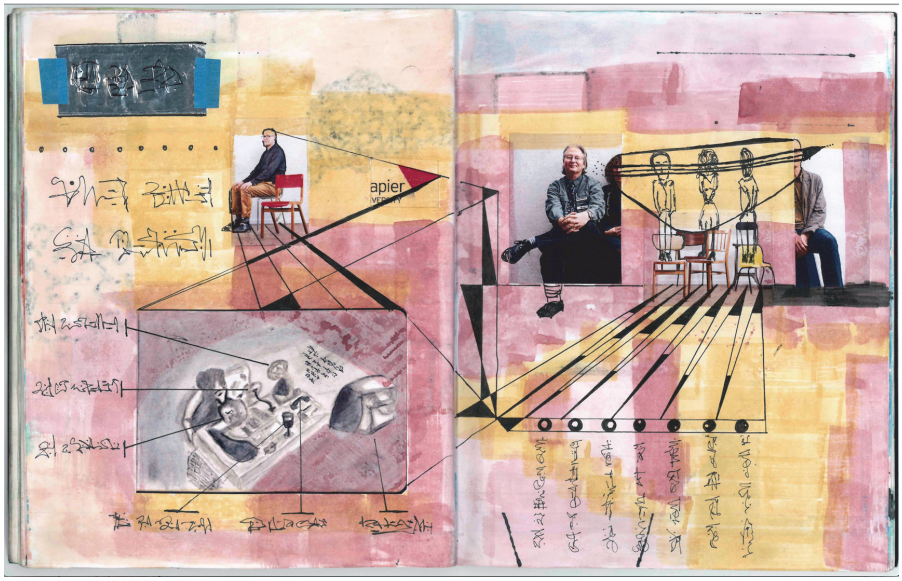

Figure 1.2: Noam Toran's Objects for Lonely Men

Critical design seeks to challenge preconceptions about the role that products play in everyday life (Dunne and Design, 2001). In *Design Noir* Dunne and Raby describe many ingenious examples. The 'Compass Table' for instance contains 25 compasses which 'twitch and spin' whenever a mobile phone, laptop or similar device is put onto it. The table may be either 'sinister or charming depending on the viewer's state of mind' (ibid). Such objects are not merely things in themselves but provocations intended to cause the viewer to reflect on their own preconceptions and values. In this sense, the designed objects imply a critique, they make strange or defamiliarize the everyday and the taken for granted (ibid).

Antecedents to this work can be found in the Italian Anti Design movement and the Radical Design movement of the 1960s. Following the second world war Italian design became synonymous with chic and style in the home, in fashion and in automobiles (Sparke, 1988). But many designers became disillusioned with the intensifying consumerism their work supported and radical architectural groups began to produce

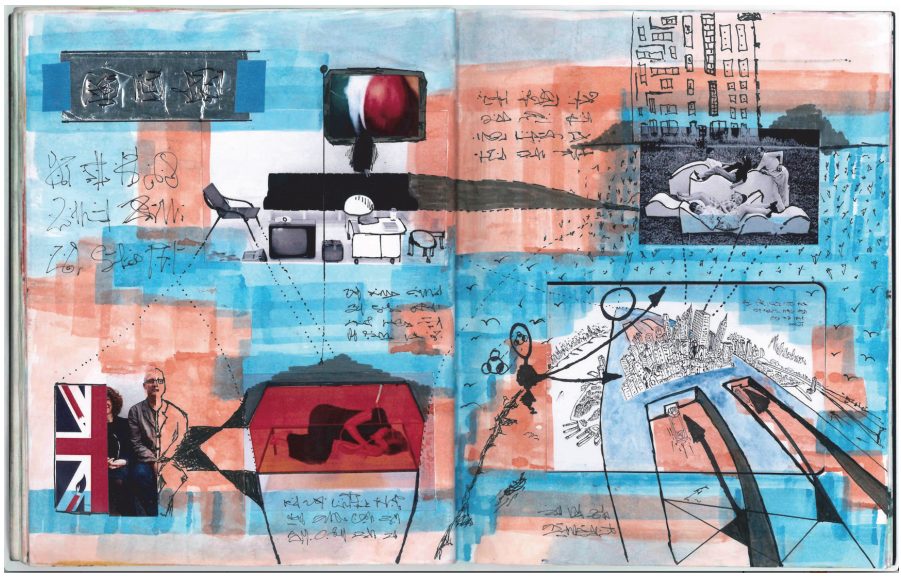

Figure 1.3: New New York. Superstudio

challenging conceptual designs (ibid). Superstudio for example produced images of a "New New York" with a gigantic white grid laid over the top of its skyscrapers to create a new space (See Figure 1.3). Similarly Archizoom Association's "No Stop City" imagined a place where people "can live inside a shopping centre, where houses are already empty incubators". The images of the "No Stop City" are repetitive grid like patterns in bleak, grainy black and white representing a "total commodification of products and life" (Branigan, 1992).

Dunne and Raby's Critical Design brought this sensibility to product design and later interaction design. It was ground breaking because it demonstrated that design need not be a solution to a set of requirements specified in response to a given problem or set of constraints. Design might also be a critique, like a political essay or satirical sketch. They saw academia as a place where such notions of design could be developed:

> "proposals like these can really only exist outside the marketplace as a form of "conceptual design" — meaning not the

> conceptual stage of a design project, but a design proposal intended to challenge preconceptions about how electronics shape our lives." (Dunne and Design, 2001).

Dunne and Raby and their students have continued to make intriguing and provocative designs but the term "critical design" is used less and less. The approach has been criticised because it positions designers as figures of knowledge / power who enlighten "cultural dopes". The work is also criticised *ad hominem* because it is mainly produced in elite institutions like the RCA and usually addresses "first world problems", (Prado and Oliveira, 2014). Describing Dunne and Raby's work as elistist is certainly unfair if not a deliberate misreading of the work but more recently they themselves describe their approach as "speculative design" or design fiction (Dunne and Raby, 2013).

But the person who has done most to popularise design fiction is Bruce Sterling. Bruce Sterling is a science fiction writer, perhaps best known for collaborating with William Gibson on the early steampunk novel "The Difference Engine" which imagines a world where the digital revolution takes place at the same time as the industrial revolution. The novel borrows from Victorian fiction, cutting and pasting situations and characters into a world of steam driven computers. This is a plausible alternate history in that many historians agree that if Charles Babbage, the inventor of the difference engine of the title had managed to win the state funding he had sought to make the "analytical engine" he would have succeeded in developing the computer that he and Ada Byron imagined. Sterling has spent a lot of time thinking seriously about design and he is deeply involved in design communities and conferences. In his non fiction book Shaping Things (Sterling, 2005) he recasts work that would ordinarily be called science fiction as "design fiction":

> "The core distinction is that design fiction makes more sense on the page than science fiction does" (ibid).

He notes that most readers would not notice the difference between this and any other science fiction, the distinction he stresses is plausibility. Sterling taught a course on design fiction at the European Graduate School and also wrote a recurring Wired magazine column under the

same name. As part of his design fiction Sterling develops "fantasy prototypes" drawing on the work of consultancies like Superflux and Dunne and Raby's "critical design". He also champions the work of Julian Bleecker and indeed credits Bleecker with the term, perhaps because he was one of the first to clearly articulate the practice in a 2009 short essay on design fiction (Bleecker, 2009).

Bleecker wrote this piece for a special issue of Personal and Ubiquitous computing responding to the Dourish and Bell paper *Resistance is Futile* (Dourish and Bell, 2014) This paper argued that, in some respects, TV shows like Blakes 7, the Hitch Hiker's Guide to the Galaxy and Planet of the Apes had more interesting things to say about the ways that technology might impact society than ubicomp literature. They argued that what design scenarios typically leave unsaid is the implicit social and political context of a design (ibid). Bleecker argued for the importance of "diegesis", a term borrowed from film studies used to indicate something that is part of a larger fictional world. For Kirby the props in movies like *Minority Report* are "diegetic prototypes" in that they functioned as a part, rather than the point of a story, often presenting the imagined technology as desirable or benevolent (Kirby, 2010).

Bleecker characterised his design fiction as "materialised thought experiments" and emphasised "physical instantiation" over future plans shown in powerpoint (Bleecker, 2009). Today, Julian Bleecker and the other members of the Near Future Laboratory are producing some of the most interesting design fictions in the form of the TBD magazine (Dunne and Design, 2001) featuring articles and advertisements for products and services that do not exist. The fake branding and image for the TBD "Miguel Bay Driving Experience" shows the view of a road from the inside of a luxury car familiar from numerous advertising campaigns, but on this otherwise empty road are realistic looking explosions of the kind encountered so often in Bond or Mission Impossible movies (for an approximation, please see Figure 1.4). The text frames the fiction in an imagined context where autonomous cars constitute 45% of journeys and drivers are bored on their daily commute, the company turn the window of the car into a game. The format of the glossy advertisement conveys the concept but also the implicit context of an industry built around driverless-car entertainment. Bleecker's fictions present not just

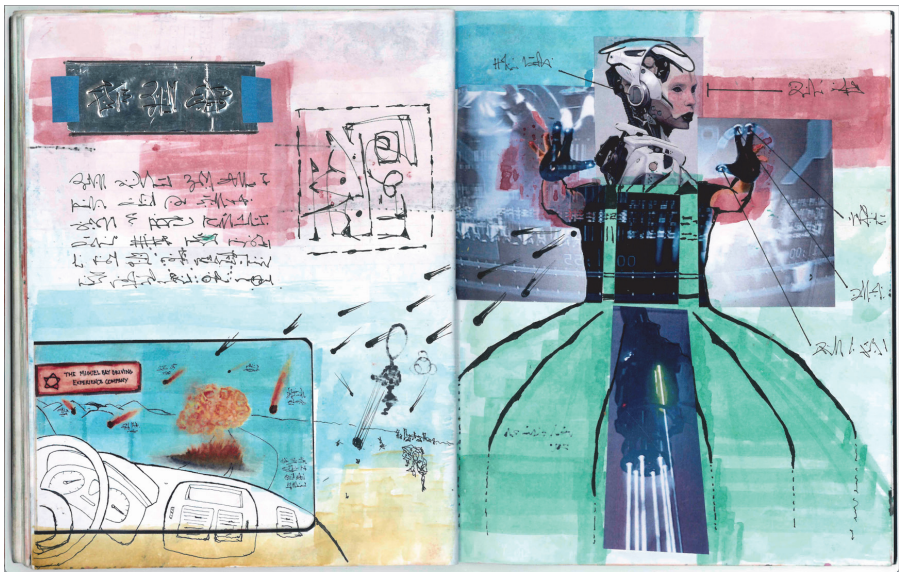

Figure 1.4: TBD and the Near Future Lab

imaginary products but worlds for them to exist in. The TBD catalogue is primarily visual but the museum installation is also used to represent design fictions. Stuart Candy's "nurture pod" shows a baby in a virtual reality pod, it is described as an "experiential prototypes" and visitors are encouraged to treat it like something they would find on a table in an Apple store (Sterling, 2017).

In a 2013 NEXT keynote address Sterling warned that we would be seeing lots more design fiction because it was cheap and people had learned how to do it (Sterling, 2013a). He suggested that the academics in the audience might usefully provide a taxonomy, categorising the varieties of design fiction that were emerging. Academics were already on the job: a 2013 special issue of the journal *Digital Creativity* sought to provide an introduction and partial taxonomy of design fiction (Hales, 2013). This taxonomy includes near future science fiction with prescient novels like William Gibson's "Pattern Recognition" as the paradigmatic example. The taxonomy included work which positions fiction as a design technique but also noted its use in corporate

propaganda. Microsoft and Phillips have both presented design fictions in promotional films bearing, according to Gonzattoa and van Amstela, the implicit message — "don't worry the future is safe in our hands" (Gonzattoa *et al.*, 2013). Sterling also discusses the corporate use of design fiction pointing to Google's release of YouTube videos showing various fantasy scenarios of Google Glass in use. More recently IKEA worked with Mobile Life and the Near Future Lab to create a future technology catalogue. *The Museum of Future Government Services* a commission by the United Arab Emirates Government, is a collection of design fictions where "governments and society work together to create a more hopeful world". And now Kickstarter campaigns seeking funds for innovative products often feature well produced videos presenting the concept they are hoping people will invest in. The qualities of the promotional video (the design fiction) is one of the most important factors in the success of the campaign (Dey *et al.*, 2017).

At the Next 13 conference keynote Sterling offered a more formal definition of design fiction as: "the deliberate use of diegetic prototypes to suspend disbelief about change." (Sterling, 2013a). Following Sterling's definition several others have been proposed. Josh Tanenbaum suggested this: "Design Fiction uses narrative elements to envision and explain possible futures for design" (Tanenbaum, 2014) Lindley and Coulton describe design fiction as: "(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", where 'something' may mean 'anything' (Lindley and Coulton, (2015-01-01))". Blythe and Encinas got in on the competing definitions game with this rather wordy effort: "Design fiction is a malleable concept: it can take the form of text, image, audio, video, model, working prototype or event; it can be conceived as a plausible idea for a technology developed with "designerly thinking", an eye for detail and practical concerns; it can be framed as a conceptual design placed within a broad cultural context focusing not just on product functionality but potential social consequences of use; it can be a tool for corporate propaganda or a means of expressing concern, dissent and critique." (Blythe and Encinas, 2016). To this burgeoning list we can add the fictional one by Valdis Ozols which retroactively predates them all.

The term design fiction has a rather strange trajectory. It emerges from British art schools in the late nineteen nineties as a practice that echoes the Italian radical design of the sixties. It becomes a tool for global corporations like Microsoft, Google and Facebook but it can also be found in crowd funding campaigns like those supported by kickstarter. Design Fiction begins as critique but ends as technique. But why has this rather old idea become so popular in the field of interaction design now?

1.1 From scenarios and personas to design fiction

Short fiction in the form of scenarios have long played an important part in design and studies of Human Computer Interaction. Carroll defined scenarios as "stories about people and their activities" (Carroll, 1999) He argued they were a tool for reflective practice: creating vivid descriptions of user experience and allowing for multiple viewpoints, (ibid). Perhaps the most influential scenarios in HCI appeared in Mark Weiser's seminal 1990s article on "The Computer for the 21st Century" (Weiser, 1991). His "Sal" scenarios describe with astonishing prescience the technologies that now shape much of our working lives. Sal wakes up to coffee brewed by her voice activated alarm clock; her windows show data indicating that her children are up; she reads an electronic newspaper and marks passages to send to work with a smart pen; a "foreview" mirror in her car warns her that she is heading towards a traffic jam and helps her to find a parking space; she collaborates on a document with Joe who she shares a virtual office with; Joe asks her if she remembers a woman at a meeting from the week before, she doesn't but she searches previous meetings and finds the woman's biography.

Critics of scenarios like these argued that the characters were two dimensional and stereotypical. Cooper's book *The Lunatics Are Running The Asylum* (Cooper, 1999) advocated the use of more richly imagined persona in scenarios. He argued that computer scientists were designing for themselves or at best the guy in the cubicle next to them. For Cooper scenarios with users that were little more than names like Harry or Sal were not adequate, there should also be demographics like age, occupation and ethnicity (ibid). For Lene Nielsen (2002) this too was

superficial. She argued for character driven scenarios taking European film as an inspiration. Blythe and colleagues suggested that scenarios might borrow from many cultural sources to develop richer scenarios (Blythe, 2004; Blythe and Wright, 2006; Blythe and Dearden, 2009). Pastiche is an imitative form of writing which borrows style, setting and characters from source material to produce new texts. Pastiche scenarios, then, draw on existing sources in order to create richer and more resonant descriptions of users and technologies. The technique was used in the special issue around Dourish and Bell's paper "Resistance is Futile' to rewrite the Sal scenarios in the style of Douglas Adams and Philip K Dick (Blythe, 2014b).

Ubicomp scenarios are still, for the most part, written in the style of Weiser's Sal story. Such scenarios resemble science fiction except for the omission of conflict, the basic foundation of all narrative (ibid). The key difference between science fiction and ubicomp scenarios is the explicit acknowledgement of social conflict and struggle (ibid). Although scenarios and personas are primarily written forms there are many forms of fictional objects with also have a long history in design.

1.2 Sketches prototypes and epistemological angst

Making paper based prototypes is a standard procedure for Interaction Designers. Early Graphical User Interfaces were planned using pieces of paper with drawings on them to represent the transition from one screen to another. The "Wizard of Oz" technique involves setting up a rudimentary model of the idea and having participants role play around it. This allows designers to think about whether a prototype is a good idea before going to the trouble and expense of actually making it (Dahlbäck *et al.*, 1993). Similarly a provotype is a provocative prototype used to explore a design space, it may function only partially and serve primarily as a discussion piece for participants in field or lab studies (Boer and Donovan, 2012). Concept designs sketching vague or abstract ideas have long been made in design workbooks and papers (e.g. Martin and Gaver, 2000; Blythe and Monk, 2002; Tohidi *et al.*, 2006; Gaver *et al.*, 2004). Design workbooks are often kept as a kind of ideas journal throughout a project noting initial thoughts, vague

concepts and collecting inspirational materials. Designers often cut and paste magazine articles or drawings into them and they look something like the imaginary workbook figures illustrating this article. While this kind of concept generation has always been part of a wider process of design these kinds of vague idea are increasingly framed as contributions themselves. This is of course controversial and upsets some people.

In the early days of HCI a computer scientist might develop some new system and frame the contribution to knowledge as — I have made this thing therefore such things can be made (Hook, 2017). Other prototypes might contrast one form of interaction with another, for example, one design of mouse against a slightly different one. Such prototypes would be measured against one another in usability tests such as — time on task, ease of use and ease of learning. These were measurable and comparable and so the value of the prototype was relatively clear. But as computing technology moved from the office to the home technology became less concerned with specific tasks. The goals of a design might be as amorphous as enjoyment or to give the user an interesting experience. Prototypes became more fanciful and their value less clear.

Zimmerman and Forlizzi (Wikipedia, 2017) argue that making research artefacts allows researchers to address complex or "wicked" problems and evaluate how current and future technologies may effect people. They make it clear that the aim of such work is not to produce commercial products but rather to apply design practice to new problems in order to create knowledge (Ibid). However, they also claim that findings will be more acceptable to the academic community if there are agreed forms of "practice, evaluation and outcome" and suggest more systematic or scientific approaches to theory development (ibid). Other practitioners have taken issue with this stance. Khovanskaya *et al.* discuss the ways in which critically orientated practitioners find themselves in a "double bind" having to adopt the language of evaluation at the same time as they subvert it (Khovanskaya *et al.*, 2015). Gaver (Gaver *et al.*, 2004) points out that taking a more scientific approach is not a straightforward proposition as there are conflicting accounts of what constitutes science. For him research through design is not repeatable, generalisable or indeed falsifiable because its claims are

vague — sometimes ambiguity creates useful features, sometimes not. But he also points out that there are many points of agreement within the community (ibid). He ends the discussion with a call to traditions of annotation such as those accompanying the design catalogues of Dieter Rams. This last move is interesting because it calls not on traditions of science or social science but rather the Arts.

As HCI takes what is being described as a "cultural turn" it has begun to struggle with the same issues that have troubled the Arts for so long. Responses to art are inherently subjective, one person likes it and another does not. Increasingly evaluations of design prototypes look like this. Some people like this or that prototype but others do not like it at all. Such findings are inconclusive because the researchers do not seek to generalize. Why, then, ask anyone what they think of a prototype? Why make a prototype at all if no hypothesis is being tested? A standard answer, based on Schon (Schön, 1992) is that design is a material exploration of a problem. But what precisely is to be learned by such explorations? What purpose is served by deploying prototypes in field studies? Is it necessary to make prototypes at all?

The value of such prototypes is often conceptual rather than practical, and research fiction can make similar (though different) contributions. Following the fictional academic work of Sanislav Lem, "imaginary abstracts" describe studies that have not taken place of prototypes that do not exist. These abstracts explore research questions and attempt to examine what the value of making a prototype might be before any making takes place (Blythe, 2014b). For example the following imaginary abstract was presented at an imaginary workshop along with five other imaginary papers on technologies to support religious and spiritual life.

> *Unworldy Goods: Supporting religious and spiritual practice through eBay Roulette*
>
> There is increasing interest in computing technologies which support religious or spiritual practice. This paper describes "Unwordly Goods", a system designed to help affluent Christians follow the teaching that they should sell all of their possessions and give their money to the poor

> (Mark 10:17–31). It was also designed to support Buddhists who wish to turn away from the material world of Samsāra and free themselves from desire. To use Unwordly Goods, users enter a list of all of their possessions into a database; the system then makes a weekly selection from the list, places the item for auction on eBay and donates the money raised to a charity of the user's choice. We recruited ten people who self identified as either Christian or Buddhist to use the system for one month. All but two dropped out of the trial before it ended. Like the rich man who "went away sad" after Jesus told him to sell his goods, six of the participants withdrew from the trial as soon as an expensive item was sold at auction. The duration of participation correlated with how long it took the system to select an item worth more than $100. Two participants gamed the system by listing only inexpensive items and both dropped out of the trial before the end. One participant completed the trial but argued that the system was simply a novelty which trivialized religious life. One participant was, however, extremely enthusiastic about the system and requested to continue using it after the trial ended. The paper argues that the challenge of designing apps to support religious practice are far from merely technical. (Blythe and Buie, 2014)

Little would be gained by actually making a system like the one described and doing so might be regarded as unethical. Making a system with this kind of rationale could be seen as offensive, trivialising religious belief. It is of course deliberately provocative, it is a rhetorical idea and the value that it has might be lost were it to cease being a fiction.

Imaginary abstracts like this question the value of potential technologies before any making takes place. Rather than beginning with a technological possibility it first considers whether that possibility is worth realising or not. Lindley and Coulton (Lindley and Coulton, 2016) have produced entire papers which imagine complete studies and findings. Taking this to its logical conclusion Kirman *et al.* (Kamin,

2008) organized a fictional conference and produced a list of fictional proceedings with some forty-paper titles.

This flurry of Design Fiction is taking place partly because the sheer speed of technological change is difficult to keep up with any other way. But also partly because it is more and more possible to make the wildest technologies we can imagine. The real question becomes not whether we can do it or not but, as Jeff Goldblum asks in Jurrasic Park, whether we should.

References

Allbeury, T. 1981. *The Twentieth Day of January*. Grafton.

Arendt, H. 1973. *The Origins of Totalitarianism*. New Ed. Harcourt Publishers Ltd College Publishers.

Ballard, J. G. 2008. *Miracles of Life: An Autobiography*. Harper Perennial.

Ballard, J. G. 2014. *Extreme Metaphors*. Eds. S. Sellars and D. O'Hara. Kindle edition.

Bardzell, J. and S. Bardzell. 2013. "What is "critical" about critical design?" In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '13)*. New York, NY, USA: ACM. 3297–330.

Bardzell, J., S. Bardzell, and L. K. Hansen. 2015. "Immodest Proposals:Research Through Design and Knowledge". In: *Proceedings of the 33rd Annual 102 ACM Conference on Human Factors in Computing Systems*. New York, NY, USA: ACM. 2093–2102. DOI: http://doi.org/10.1145/2702123.2702400.

Barthes, R. 1993. *Image, Music, Text*. Fontana Press: New Ed edition.

BBC. 2010. "Has Belfast Film Maker Found Time Travel Evidence?" http://www.bbc.co.uk/news/uk-northern-ireland-11646933.

Bleecker, J. 2009. "Design Fiction: A Short Essay on Design, Science, Fact and Fiction". http://drbfw5wfjlxon.cloudfront.net/writing/DesignFiction_WebEdition.pdf.

Blythe, M. 2004. "Pastiche scenarios". interactions 11, 5 September 2004, pp 51–53.

Blythe, M. 2014a. "Research through design fiction: narrative in real and imaginary abstracts". In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '14)*. New York, NY, USA: ACM. 703–712.

Blythe, M. 2014b. "The hitchhiker's guide to ubicomp: Using techniques from literary and critical theory to reframe scientific agendas". *Personal Ubiquitous Comput.* 18.

Blythe, M. 2017. "Research Fiction: Storytelling". Plot and Design CHI 2017 Denver Colorado.

Blythe, M. and E. Buie. 2014. "Digital Spirits: Report of an Imaginary Workshop on Technologies to Support Religious and Spiritual Experience". Position paper for CHI'14 workshop on design fiction [83].

Blythe, M. and A. Dearden. 2009. "Representing older people: Towards meaningful images of the user in design scenarios". *Universal Access in the Information Society*. 8(1): 21–32.

Blythe, M., E. Encinas, J. Kaye, M. Avery, R. McCabe, and A. Andersen. 2018. "Imaginary Design Workbooks: Constructive Criticism and Practical Provocation". CHI 2018 Montreal.

Blythe, M. and M. Encinas. 2016. "The Co-ordinates of Design Fiction: Extrapolation, Irony, Ambiguity and Magic". In: *Proceedings of the 19th International Conference on Supporting Group Work (GROUP '16)*. New York, NY, USA: ACM. 345–354.

Blythe, M. and A. Monk. 2002. *Notes Towards an Ethnography of Domestic Technology*. London: DIS 2002.

Blythe, M. and P. Wright. 2006. "Pastiche Scenarios: Fiction as a Resource for Experience Centred Design". *Interacting with Computers*. 18(5): 1139–1164.

Blythe, M. A., P. C. Wright, and A. F. Monk. 2004. "Little brother: Could and should wearable computing technologies be applied to reducing older people's fear of crime?" *Personal Ubiquitous Comput.* 8(6).

Boer, L. and J. Donovan. 2012. "Provotypes for participatory innovation". In: *Proceedings of the Designing Interactive Systems Conference (DIS '12)*. New York, NY, USA: ACM. 388–397.

Booker, C. 2005. *The Seven Basic Plots*. Kindle Edition.

Bourdieu, P. 1991. *Language and Symbolic Power*. Cambridge Mass: Harvard University Press.

Branigan, E. 1992. *Narrative Comprehension and Film*. London: Routledge.

Brown, J. R. and Y. Fehige. 2017. ""Thought Experiments", The Stanford Encyclopedia of Philosophy (Summer 2017 Edition)". Edward N. Zalta, (ed.), https://plato.stanford.edu/archives/sum2017/entries/thought-experiment/.

Bruner, J. 2004. "Life as Narrative". *Social research*. 71(3). Fall 2004 https://ewasteschools.pbworks.com/f/Bruner_J_LifeAsNarrative.pdf.

Buie, E. A. 2018. *Exploring Techno-Spirituality: Design Strategies for Transcendent User Experiences*. PhD thesis. Northumbria University.

Buzzo, D. and D. Jonas. 2015. "Designing for the impossible: Creating a mobile application to track time dilation". In: *Proceedings of the Conference on Electronic Visualisation and the Arts (EVA '15)*. Swindon, UK: BCS Learning & Development Ltd. 106–112.

Carroll, J. M. 1999. *Five Reasons for Scenario Based Design*. IEEE Proceedings of the 32nd Hawaii.

Cennin, F. 2018. "The Titanic Before the Titanic". http://digilander.libero.it/flavio.cenni/.

Chesterton, G. K. 1904. "The Napoleon of Notting Hill".

Chunjuan, N. and D. E. B. Wei. 2012. "Mr. Science and Chairman Mao's Cultural Revolution: Science and Technology in Modern China". Lexington Books 2012.

Coleridge, S. T. 1817. "Biographia Literaria".

Cooper, A. 1999. "The Inmates are Running the Asylum: Why High-tech Products Drive Us Crazy and How to Restore the Sanity Pearson Education".

Croft, J. 2015. "Composition is not Research". Tempo 69/272.

Dahlbäck, N., A. Jönsson, and L. Ahrenberg. 1993. "Wizard of Oz studies: why and how". In: *Proceedings of the 1st international conference on Intelligent user interfaces (IUI '93)*. New York, NY, USA: ACM. 193–200.

Davenport, E. A. 1983. "Literature as Thought Experiment (On Aiding and Abetting the Muse)". *Philosophy of the Social SciencesPacific Philosophical Quarterly*. 13: 279–306.

Davis, M. 2003. "Theoretical Foundations for Experiential Systems Design". ETP 03 2003 Berkeley, USA ACM pp 45–52.

Dey, S., B. Duff, K. Karahalios, and W. Fu. 2017. "The Art and Science of Persuasion: Not All Crowdfunding Campaign Videos are The Same". In: *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (CSCW '17)*.

DiFranzo, D. and K. Gloria-Garcia. 2017. "Filter bubbles and fake news". XRDS 23, 3 (April 2017), 32–3.

Dikkoter, F. 2017. "The Cultural Revolution: A People's History". 1962–1976 Bloomsbury Paperbacks.

Dourish, P. and G. Bell. 2007. "Yesterday's Tomorrows: Notes on Ubiquitous Computing's Dominant VIsion". *Personal and Ubiquitous Computing*: 133–144.

Dourish, P. and G. Bell. 2014. "Resistance is Futile". Reading Science Fiction Alongside Ubiquitous Computing. *Personal and Ubiquitous Computing*. 18(4): 769–778.

Dunne, A. and R. F. Design. 2001. *Noir: The Secret Life of Electronic Objects*. p65 Springer Science & Business Media.

Dunne, T. and F. Raby. 2013. *Speculative Everything: Design, Fiction and Social Dreaming*. MIT Press.

Eric, P. S., J. A. Baumer, M. Bie, E. M. Bonsignore, A. Börütecene, O. T. Buruk, T. Clegg, A. Druin, F. Echtler, D. Gruen, M. L. Guha, C. Hordatt, A. Krüger, S. Maidenbaum, M. Malu, B. McNally, M. Muller, L. Norooz, J. Norton, O. Ozcan, D. J. Patterson, A. Riener, S. I. Ross, K. Rust, J. Schöning, M. S. Silberman, B. Tomlinson, and J. Yip. 2014. "CHI 2039: speculative research visions". Altchi CHI EA '14: CHI '14 Extended Abstracts on Human Factors in Computing Systems.

Forlizzi, J., I. Koskinen, P. Hekker, and J. Zimmerman. 2017. "Let's Get Divorced: Constructive Design Research and Critical Design". IASDR 2017.

Foster, E. M. 2016. *Aspects of the Novel*. Kindle Edition.

Gaver, W. 2011. *How Design Workbooks Work*. Canada: CHI 100 Vancouver.

Gaver, W., J. Bowers, A. Boucher, H. Gellerson, S. Pennington, A. Schmidt, A. Steed, A. Villars, and B. Walker. 2004. "The drift table: Designing for ludic engagement". In: *CHI '04 Extended Abstracts on Human Factors in Computing Systems (CHI EA '04)*. New York, NY, USA: ACM. 885–900.

Gibson, W. 2012. *Distrust That Particular Flavor*. Berkley Publishing Group.

Gonzattoa, R. F., F. van Amstela, L. Merkleb, and T. Hartmann. 2013. "The Ideology of the Future in Design Fictions". *Digital Creativity*. 24(1).

Gray, D., S. Brown, and J. Macanufo. 2010. *Gamestorming: A Playbook for Innovators, Rulebreakers, and Changemakers*. O' Reilly Media Inc.

Greenberg, S. and B. Buxton. 2008. "Usability evaluation considered harmful (some of the time)". In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '08)*. New York, NY, USA: ACM. 111–12.

Hales, D. 2013. "Design Fictions an Introduction and Partial Taxonomy". *Digital Creativity*. 24(1). Special Issue: Design Fictions 30 Apr 2013.

Hennessey, B. 1971. "J.G. Ballard". *Transatlantic Review* no.39, Spring.

Hook, K. 2017. "Changing Academic Life". Podcast http://www.changingacademiclife.com/blog/2017/2/12/kia-hook.

Hume, D. 1902. *An Enquiry Concerning Human Understanding*. Oxford, Clarendon Press.

Jackson, N. 2010. "Debunking the Charlie Chaplin Time Travel Video". https://www.theatlantic.com/technology/archive/2010/11/debunking-the-charlie-chaplin-time-travel-video/65486/.

Jameson, F. 2007. *Archaeologies of the Future: The Desire Called Utopia and Other Science Fictions*. Verso books.

Johnson, B. 2015. *The Churchill Factor: How One Man Made History*. Hodder.

Johnson, B. D. 2011. "Science Fiction Prototyping: Designing the Future with Science Fiction". Synthesis Lectures on Computer Science. Morgan and Claypole.

Johnson, J. 1988. "Mixing humans and non humans together: The sociology of a door closer". *Social Problems*. 35(3).

Jones, J. 2005. *How William Shatner Changed The World*. Discover Channel.

Kamin, D. 2008. *The Comedy of Charlie Chaplin*. Scarecrow Press.

Khovanskaya, V., E. Baumer, and P. Sengers. 2015. "Double Binds and Double Blinds: Evaluation Tactics in Critically Oriented HCI 5th Decennial Aarhus Conference on Critical Alternatives". August 17 — 21, 2015, Aarhus Denmark.

Kirby, D. 2010. "The Future Is Now: Diegetic Prototypes and the Role of Popular Films in Generating Real-World Technological Development". *Social Studies of Science*. 40(1): 41–70. February 2010.

Knight, W. 2002. ""Tooth-Phone" Provides Covert Chat". *New Scientist*. 20. June 2002.

Lanier, J. 2017. *Dawn of the New Everything: A Journey Through Virtual Reality*. Kindle edition.

Leavis, F. R. 1972. *Two Cultures. The Significance of Lord Snow*. London: Chatton and Windus.

Leavitt, D. 2006. *The Man Who Knew Too Much: Alan Turing and the Invention of the Computer*. Phoenix.

Lindley, J. and P. Coulton. 2016. "Peer Review and Design Fiction: "Great Scott! The quotes are redacted"". In: *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '16)*. New York, NY, USA: ACM. 583–595.

Lindley, J. and P. L. Coulton. (2015-01-01). "Back to the Future: 10 Years of Design Fiction". In: *Proceedings of the 2015 British HCI Conference. British HCI '15*. New York, NY, USA: ACM. 210–211.

Liu, C. 2016. *The Three Body Problem translated Ken Liu*. Kindle edition.

Mackay, M. 2008. "Stepping into the Subjunctive World of the Fiction in Game, Film and Novel". *Loading*.... 2(3). 2008 http://journals.sfu.ca/loading/index.php/loading/article/view/46/42.

Marcus, A., D. A. Norman, R. Rucker, B. Sterling, and V. Vinge. 1992. "Sci-Fi at CHI: Cyberpunk novelists Predict Future User Interfaces in Proc CHI 1992 p 435–437". Monteray CA USA.

Martin, H. and B. Gaver. 2000. "Beyond the snapshot from speculation to prototypes in audiophotography". In: *Proceedings of the 3rd conference on Designing interactive systems: Processes, practices, methods, and techniques (DIS '00)*. New York, NY, USA: ACM. 55–65.

Milton, A. 2003. "Filmic Design — A Hitchcockian Design Strategy". European Academy of Design Conference, 28–30 April 2003, Barcelona, Spain. http://www.ub.edu/5ead/PDF/8/Milton.pdf.

MIT Technology Review. 2015. "Why Self-Driving Cars Must Be Programmed To Kill". Oct 22. 2015 https://www.technologyreview.com/s/542626/why-self-driving-cars-must-be-programmed-to-kill/.

Morozov, E. 2013. *To Save Everything Click Here: Technology, Solutionism and the Urge to Fix Problems That Don't Exist*. Kindle edition.

Murray, J. H. 1998. *Hamlet on the Holodeck*. MIT Press.

Nielsen, L. 2002. *From user to character: An investigation into user-descriptions in scenarios (DIS '02)*. New York, NY, USA: ACM, 99–104.

Norman, D. 2013. *The Psychology of Everyday Things*. MIT Press.

Pace, I. 2016. "Composition and performance can be, and often have been, Research". *Tempo*. 70(275): 60–70.

Page, M. 2015. *Frederich Pohl*. University of Illinois Press.

Payne, M. 2006. *Narrative Therapy*. Sage: Second Edition.

Pierce, J., P. Sengers, T. Hirsch, T. Jenkins, W. Gaver, and C. DiSalvo. 2015. "Expanding and Refining Design and Criticality in HCI". In: *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*. New York, NY, USA: ACM. 2083–209.

Prado, L. and P. Oliveira. 2014. "Futuristic Gizmos, Conservative Ideas: On Anachronistic Design". In: *Modes of Criticism 1*. Francisco Laranjo Feb 11 2015.

Radiolab. 2017. "Breaking News". July 27 2017 http://www.radiolab.org/story/breaking-news/.

Reeves, C. 2016. "Composition, research and pseudo-science". *A Response to John Croft. Tempo*. 70(275): 50–59.

Ricoueur, P. 1984. "Time and Narrative Vol 1". Translated by Kathleen McLaughlin and David Pellauer.

Robertson, R. 1898. *The Wreck of the Titan or Futility*. Kindle Edition.

Schön, D. A. 1992. "Designing as reflective conversation with the materials of a design situation". *Knowledge-Based Systems*. 5(1): 3–14.

Smith, M. B. 2013. "Mystery of 1938 "Time Traveller" With Cell Phone Solved?" http://www.huffingtonpost.com/2013/04/04/time-traveler-cell-phone-1938-video-woman-factory_n_3013996.html.

Sparke, P. 1988. *Design in Italy 1870 to the present*. New York: Beville Press.

Sterling, B. 2005. *Shaping Things*. Cambridge Massachusetts: MIT Press.

Sterling, B. 2013a. "Fantasy Prototypes and Real Disruption". Keynote NEXT Berlin 2013. https://www.youtube.com/watch?v=M7KErICTSHU.

Sterling, B. 2013b. "Patently untrue: Fleshy defibrillators and synchronised baseball are changing the future". Wired. 2013-10-11. Retrieved 2017-01-31.

Sterling, B. 2017. "Design Fiction: Stuart Candy, "Nurture Pod"". Wired magazine. 07.06.2017 https://www.wired.com/beyond-the-beyond/2017/07/design-fiction-stuart-candy-nurturepod/.

Stimson, T. E. 1952. "A House To Make Life Easy Popular Mechanics". 97(6).

Stoppard, T. 1980. *Dogg's Hamlet, Cahoots Macbeth*. Faber and Faber.

Swirski, P. 2007. *Of Literature and Knowledge: Explorations in Narrative Thought Experiments*. Evolution and Game Theory, London & New York: Routledge.

Tanenbaum, J. 2014. "What is Design Fiction". Quora. https://www.quora.com/What-is-design-fiction.

Tohidi, M., W. Buxton, R. Baecker, and A. Sellen. 2006. "User sketches: A quick, inexpensive, and effective way to elicit more reflective user feedback". In: *Proceedings of the 4th Nordic conference on Human-computer interaction: changing roles (NordiCHI '06)*. New York, NY, USA: ACM. 105–114.

Tolkien, J. R. R. 1947. "On Fairy Stories". *Essays Presented to Charles Williams*.

Toran, N. 2001. "Mixed Media". Accessories for Lonely Men. http://noamtoran.com/NT2009/projects/accessories-for-lonely-men.

Turing, A. 1936. "On Computable Numbers, With An Application To The Entscheidungsproblem". https://www.cs.virginia.edu/~robins/Turing_Paper_1936.pdf.

Vonnegut, K. 2007. *A Man Without A Country*. Bloomsbury publishing.

Vonnegut, K. 2010. "On the Shapes of Stories". YouTube 2010. https://www.youtube.com/watch?v=oP3c1h8v2ZQ.

Walker, B. 2017. "Theory Of Everything". 20.01.2017. https://toe.prx.org/2017/01/885/.

Weiser, W. 1991. "The Computer of the 21st Century". Scientific American Special Issue on Communication, Computers and Networks.

Wells, H. G. 1903. "The Land Ironclads". Collected stories of HG Wells. http://gutenberg.net.au/ebooks06/0604041h.html.

Wikipedia. 2017. "Thought Experiments". Accessed May 2017.

Zimmerman, J. and J. Forlizzi. 2008. "The Role of Design Artifacts in Design Theory Construction". Human Computer Interaction Institute. Paper 37. Carnegie Mellon University.

Zizek, S. 2009. *First as History then as Farce*. Verso London.

Zizek, S. 2014. *Zizek's Jokes: (Did you hear the one about Hegel and Negation*. MIT Press Kindle edition.