

The Poetics of Design Fiction

Thomas Markussen
Kolding School of Design
Aagade 10
DK-6000 Kolding
tm@dskd.dk

Eva Knutz
Kolding School of Design
Aagade 10
DK-6000, Kolding
ek@dskd.dk

ABSTRACT

Design fiction is an emergent field within HCI and interaction design the understanding of which ultimately relies, so we argue, of an integrative account of poetics and design praxis. In this paper we give such an account. Initially, a precise definition of design fiction is given by drawing on the theory of possible worlds found within poetics. Further, we offer a method of practicing design fiction, which relies on the equal integration of literary practice with design practice. The use of this method is demonstrated by 4 design projects from a workshop set up in collaboration with a Danish author. All of this substantiates our notion of a poetics of practicing design fiction, and through our critical examination of related work we conclude on how our approach contribute to HCI and interaction design.

Author Keywords

Design Fiction, Poetics, Utopianism

General Terms

Design Fiction

INTRODUCTION

Design Fiction is an emergent field within HCI and interaction design, which has received increasing interest recently through journal special issues, conference papers and books ([1]–[9]). It is obvious from the growing literature that design fiction is open to several different interpretations, ideologies and aims. From Auger praising design fiction as a method enabling the designer to “remove the constraints from the commercial sector that define normative design processes” [4, p. 11] to Blythe and Wright [6] who see design fiction as a much needed complementary method in user centred design that give designers access to inner felt aspects of user experience.

Insofar as design fiction is recognised as a legitimate research approach in interaction design, there is a need for more formal studies trying to uncover its underlying methodologies and practices.

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee.

DPPI'13, September 3 – 5, 2013, Newcastle upon Tyne, UK.

Copyright © 2013 ACM 978-1-4503-2192-1/13/09...\$15.00.

In this paper we argue that a better understanding of design fiction ultimately relies on an integrative view of poetics and design praxis. In forfeiting this idea we ground our approach in the original conception by the sci-fi writer Bruce Sterling who conceives of design fiction as a methodological intertwining of the designer’s practice with that of the author’s. To explain this cross-disciplinary merging Sterling uses the example of the American designer Norman Bel Geddes who, in the 1920s, envisioned what at that time must have looked like a utopia: gargantuan airliners transporting people across the Atlantic [10]. This, Sterling would say, is not in any way different from Jules Verne’s proposing the idea in the 1870s of a nuclear-driven submarine called Nautilus in the adventure novel *Twenty Thousand Leagues Under the Sea* [11]. Design fiction revolves precisely around this similarity in practice between the author and the designer.

Authors, designers, architects and artists have always used fiction and utopias as techniques for experimenting with alternative models for society or possible futures [12]. What is new is that fictional practices are now being looked upon as viable roads for producing valid knowledge in design research and science [3].

In this paper we argue that there is a need to increase understanding of design fiction as a research method and approach. While Sterling provides many insights into the nature of design fiction and the forms it may take (diegetic objects, speculative prototypes, etc.), his focus of attention is on design fiction as a creative technique not as a research method. Interestingly, such a methodology can be found in Grand & Wiedmer [3] who propose a so-called method toolbox for how design researchers can use design fiction in their research practice. However, as we will demonstrate Grand and Wiedmer’s toolbox is lacking conceptual clarity and tools in several respects. To provide these tools, and as a way of remedying the inherent limitation in their work, we argue that a methodology for design fiction could ideally be developed as a poetics of design fiction.

Originally, poetics is conceived of as the discipline within literary theory and semiotics, which studies the verbal and compositional techniques of fictional world making in the literary work of art. If we transfer this disciplinary aim to the field of design research, a poetics of design fiction

would consist in giving a formal account of, for instance, various techniques for prototyping possible futures, the role of utopias and dystopias in design research experiments and the types of knowledge that may result from practicing design fiction.

The poetics of design fiction we propose in this paper positions itself within a broader field of related work. Hence, to set the scene, we start out in the first sections by briefly examining the work of other researchers in order to clearly define and position our approach. One central difference to other interpretations of design fiction is that we put emphasis on a strong coupling between literary practice and design practice. To make our case, we will present a cross-disciplinary 4-step method for prototyping design fictions that was initially tried out in a one-week workshop held in close collaboration with a Danish author in 2013.

Taking the author's unpublished manuscript for his next novel as a starting point, we invited design students to design for a dystopia in the near future: a destructive civil war in Denmark that breaks out in 2018 as a consequence of the financial and economic crisis. By making integrative use of poetic techniques and design experiments the design students were instructed to craft a number of design fictions speculating about how the civil war would effect a radical change in our family structures, rituals, health care services, energy supply, to mention but a few themes. On the basis of this we got a number of speculative prototypes each of which embed different knowledge outcomes as well as they exemplify how the method is based on the merging of literary techniques with design practice. Such a method must be considered central inventory for a poetics of design fiction.

DESIGN FICTION AS A CHALLENGE TO DESIGN RESEARCH

Design research is usually characterized in general terms as a research discipline that deals with the world as it could or ought to be instead of how the world is [13]. In the sense that design research thus engages with preferable future situations and alternate realities, it has design fiction as part and parcel of its practice. This is the central argument found in Grand & Wiedmer [3]. However, such a claim cannot stand for itself. It thus raises the question of what the notion of fiction denotes and wherein the similarities and differences lie between fictions on the one hand, and possible futures and alternatives realities on the other. Fiction bears many similarities with the possible, but it is not reducible to it. To define fiction, therefore, is a challenge for design research.

Defining 'design fiction'

According to Grand & Wiedmer design fiction is about finding the right focus in-between the simply utopian which is "too far away from our current concerns", and the "too

realistic which is too close to what we already know and experience" [3]. However, such a "right focus in-between" must be further determined as a defining criterion for design fiction, because how do we decide whether something is too far away from our current concerns or too close to what we already know? Consider, for instance, the author Kaspar Colding Nielsen's award-winning novel *Mount København* that tells the story of a 4 kilometres high Mountain in Copenhagen that completely changes the fauna, animal life and climate of the Danish capital, but also the behaviour of people and the entire culture [14].

Almost everyone would say that this mountain is pure utopia being too far away from our current concerns. However, today a consortium consisting of engineers, architects, politicians and urban planners have been established with the aim of working out a proposal of how such a mountain can actually be constructed within 30 years. The idea being that by constructing it as a giant water-tank such a mountain would give Denmark the opportunity to store some of the surplus energy from windmills that are now wasted because there are no means for storing it for later use.

What is too far away from our present realities seems not to be a valid criterion for determining the nature and range of design fiction. Utopias and dystopias should indeed, as we have argued elsewhere [15], be regarded as essential forms that design fiction may take. The central question to ask is how they are connected to our present realities?

In poetics there is long history for analysing this connection as being a question of *mimesis*. One school of thought represents the idea that utopias and fictions should be defined according to their *resemblance* to reality. However, such a view, originating with Plato [16] and taken up later by Auerbach [17], relies on the stipulation of reality as being the original, whereas fictions and utopias can only take a secondary position as faded copies thereof.

A resemblance theory of fiction is problematic in at least one more respect. If fiction is to be measured according to its resemblance to reality, then there will be no room for fictional worlds that do not resemble what we consider as real. What about fictional worlds that do not bear any resemblances to reality? Are they to be discounted as 'bad fiction' or simply not taken serious? This would actually comply with another widespread definition of fiction as that which is untrue. But truth is not a valid criterion for defining fiction either.

Take, for instance, the notion of wormholes or 'Einstein-Rosen Bridges', as they are called in physics, which opens up for the opportunity that it is possible not only to travel through space, but also through time. Wormholes are difficult to conceive because they do not resemble our reality at all and they are hard to fit into the prevailing scientific explanation of the universe, which is considered as representing the truth. In this sense, there seems to be no

difference between wormholes and “the beam me up Scotty” in the Star Trek TV-series.

In order to embrace fiction as a central practice in science as well as in art and literature an alternative theory of fiction has been developed more recently within poetics [18]–[20]. The so-called *possible world* theory (or possible world semantics) is based on the assumption that fictions can be properly understood as ‘possible worlds’, which can be either easy or difficult to access from our real world.

Accessibility can be characterized, for instance, in terms of basic ontological laws that enable and constrain entities’ behaviour in a possible world as compared to the real world. Seen in this light, wormholes are a challenge for our imagination, because they defy the ontological laws of our physical world. Yet, on this account, wormholes are not dispelled as being too distant from reality. On the contrary, wormholes are accepted as a centrepiece in a speculative possible world that in physics has its place in the theory of general relativity.

The possible world theory has much to offer to Grand & Wiedmer’s tentative definition. First, it allows us to give a more detailed account of the ‘in-between’ not as a place between opposites (the simply utopian versus the real), but as a dynamic relation that can be characterized in terms of various criteria of accessibility [18]. Secondly, it does not rule out utopian and dystopian practices, but sees them as equally important for design fiction as a research practice. Thirdly, it gives us the opportunity to treat highly speculative constructs of the physicists, imaginary constructs of the poet and the diegetic prototypes of the designer as belonging to the same family without instigating a hierarchy between them according to what is considered scientific vis-à-vis artistic. This is important at a time where controversies in science studies revolve around the increasing emphasis on the imaginary and constructivist nature of scientific practice [3].

A poetics of fictional practice in design research

While the clarification of the notion of fiction is a matter of definition, a more elaborated understanding of design fiction as a research method rely on delving further into the practice of prototyping the future, and how possible worlds materialize themselves as *design* fictions. From recent studies in HCI and interaction design it is possible to identify a variety of such practices.

In their method toolbox Grand & Wiedmer list sketching on paper, building models and mock-ups, mood boards and a number of other techniques and tools that they deem most important for practicing design fiction. Yet, these tools and techniques are found in the method toolbox of every designer, while saying only little of how they are useful for practicing design fiction. A methodological account does not consist in simply listing *what* tools can be used, but rather in explaining *how* and for what purposes they are used.

In critical design, for instance, design techniques are utilized in the making of so-called *para-functional* or *post-optimal* objects. The purpose of so doing is often to evoke feelings of estrangement in product use, which encourage people to reflect critically upon cultural stereotypes and ideologies driving the development of new technologies [1, pp. 42–43]. A good example of this is Dunne & Raby’s Technological Dream Series: No. 1, Robots-Robots 3 (2007) where a robot demands that you stare into its eyes for a long time before it can be operated. Because of its awkward furniture-looking shape and material the robot dismantles the culturally entrenched image of robots as alien and unfamiliar. It even suggests human-robot interaction to be an intimate and emotional affair.

Auger [4] advocates for a similar, yet slightly different practice of ‘speculative design’. While de-familiarisation tends to overtake the functionality of many critical design projects, Auger’s speculative objects are usually not strange to operate as such. In fact, they seem almost too familiar confronting us with the domestication of technologies into unforeseen corners of human lives. This is evidenced, for instance, by Auger and Loizeau’s Afterlife battery (2008) – a battery that can be charged with the decomposition processes of deceased family member’s body through the use of microbial fuel cells. The battery thus stores the last signs of life as energy in the battery and allows those left behind to use the battery in various appliances thereby giving their beloved an electrified after life. In so doing the battery instigates “a metaphysical dialogue examining the cultural shift from belief systems upheld by organised religion to the more factual basis of science and technology.” [4, pp. 15–16]

DiSalvo [21] is adding further knowledge to the understanding of the practice of speculative design. DiSalvo’s overall claim is that speculative design constructs can be properly explained by drawing on the analytical concept of ‘tropes’, which in rhetoric and poetics serves as an umbrella term designating various figures of speech: metaphor, metonymy, hyperbole, and so on. To substantiate this idea, he mentions Family Whiskey, a speculative design project by James Gilpin in which Gilpin proposes that urine from diabetics might be used in the production of custom whiskeys. One result of diabetes is that diabetics produce urine with extremely high sugar content. Gilpin, who is himself a diabetics, suggest that by extracting sugar and combining it with mash in the production of whiskey, the fermentation process can be accelerated and new flavour profiles may be produced.

According to DiSalvo Family Whiskey is not about literally suggesting a new food culture or installing distilleries in the home of diabetics. Rather, the project uses food as a figurative means for expressing a concern for the consequences of using science and technology to alter the body. In this sense food and food cultures are used as tropes being defined by DiSalvo as “tools for crafting meaning”,

and for enabling “the creative manipulation of material and form so that we can make one thing mean another.” [21, p. 117].

We agree with DiSalvo in that the understanding of design fictions can certainly benefit from drawing on analytical concepts from poetics and rhetoric. However, we find DiSalvo’s treatment is too limited for two reasons. First, by drawing exclusively on the analytical concept of tropes derived from the linguistic study of the literary text he leaves out of consideration the unique materiality and medium of design artefacts. Secondly, his focus of attention is not primarily on the designer, but on the reception of design, how design fiction may be communicated to and engage an audience in consideration, reflection and developing an awareness of the future to come.

Also, in Dunne and Raby as well as in Auger literary techniques and writing practice are rarely brought into the design process itself. They remain conceptual tools for theorizing or a source of inspiration rather than a practical tool.

The aim of this paper is to cast more light on design fiction as a research method by making closer scrutiny into the methodological cross-breeding between literary practice and design, between the author and the designer. In grounding our approach in this foundational idea of Sterling, we can find support from recent studies in HCI and interaction design.

Blythe and Wright [6] introduce what they call ‘pastiche scenarios’ as a complementary method in user centred design for the purpose of giving designers access to felt-life experience when designing new technologies. According to Blythe and Wright pastiche scenarios overcome the limitations inherent in two design tools central to HCI design, namely *scenario* and *personae*. Leaning on Nielsen [22], Blythe and Wright criticise scenarios for addressing only what happens over and above what the character feels about the situation. Scenarios are stereotypes, “mere functionaries that illustrate the workings of the product being described” [6, p. 1141].

In a similar vein, personae are criticised for being only flat characters synthesised from demographic information about users gathered from interviews like age, occupation, family relations and so on. They are a rather static list of attributes that do not suggest a sense of personal history, growth or experience [6, p. 1142]. Elaborating on Cooper’s work [23], Blythe and Wright then introduce pastiche scenarios as a technique for portraying unique characters with individual histories, thoughts and feelings [6, p. 1162]. In a pastiche scenario the use and experience of a product is depicted through the eyes and mind of fictive characters from popular novels and films (e.g. Bridget Jones, Miss Marple or Alex from Anthony Burgess’s *A Clockwork Orange*). The re-use of these character allows the designer to access interior aspects of user experience and to engage users more

easily in participatory processes of envisioning technologies for imaginable futures, since they can draw on their shared knowledge of familiar fictive character.

Likewise Morrison et al. [7] make direct use of literary techniques in the design process. More specifically, they experiment with various techniques of anthropomorphising surveillance technology giving a gendered persona and poetic voice to a drone. The purpose of so doing was to let the drone sense the possible conflicts of interest resulting from extending wireless and sensing technologies originally developed for combat zones into the urban environment [7, p. 52].

Tanenbaum et al. [5] represent our last example of fictional practice in interaction design. In *Steampunk as Design Fiction*, they argue that Steampunk can be an explicit model for how to physically realize an ideological and imagined world through design practice. Steampunk is defined here as “the re-envisioning of modern day technology through the lens of a fantastic and idealized vision of the Victorian Era” [5, p. 1583]. Hence, it comes with a whole set of anachronistic material obsessions and technologies: leather, wood, brass, wax, glass and most importantly steam engines and clockwork automatons. By using Steampunk as a design strategy the authors claim that designers can contribute to the making of an entire culture of DIY and craftsmanship where amateurs take agency over technology and where mass production and scale is replaced by a focus on customization and the singular [5, p. 1589].

Without necessarily sharing the same agendas as these authors, our approach is similar in that we argue for the need of turning towards design practice itself and make further explorations into how tools and technique of the designer may integrate with those of the author in the construction of design fiction. In so doing, we wish to develop a poetics of fictional practices in design research based on the merging of design and writing practices. To make our case we will present the findings from a workshop that were set up in order to investigate the methodological cross-territory of design fiction, and from that extract a 4-step method for fictional practice in design research.

DEVELOPING METHODS FOR PROTOTYPING THE FUTURE

To investigate the exchange between the practice of the author and the practice of the designer, a one-week workshop was set up at Kolding School of Design, in collaboration with the award-winning author Kaspar Colling Nielsen. The overall purpose of this workshop was to explore how design fiction can be approached from the literary practice of the writer and challenge the way designer’s prototype and materialize the future. This article is using prototypes developed during this workshop, which involved thirty design students from communication design (graphic designers, illustrators and interaction designers), one author and two design researchers.

Case: “Civil War in Denmark” – a Workshop in Design Fiction

The aim of the workshop was to use the process of making and designing prototypes (being graphical prototypes, mock-ups, models, objects or enacted situations) to investigate the following question: How can we prototype the future? What is the “exchange” between the praxis of the author and the designer? How can we develop or establish a methodology for design fiction?

For this specific purpose, a group of design students were instructed to use the un-published manuscript of Kaspar Colling Nielsen’s next novel “The Civil War in Denmark” [24] as design material and a starting point for their design process. The method used in the workshop will be referred to as a 4-step method for prototyping design fictions.

Design material

The novel “The Civil War in Denmark” draws a dystopian picture of the future of Denmark. In this world, due to a complete collapse in the financial sector and the economy, Denmark has been thrown into a devastating civil war. The housing market has broken down, people have lost their houses and jobs, the politicians have been lynched and executed on Copenhagen’s central square “Christiansborgs Slotsplads” by furious citizens, and the capital has been destroyed, due to the violent fights between armed civilians and the army. The strange thing about this manuscript is that the story about the war is not written in the present or the future tense, but in the past tense. The story is thus told by a 475 year old aristocrat, who has gone through a stem cell program that has extended his life-time and who looks back on the experiences in his youth of the civil war that breaks out in 2018. Together with his dog, a strange creature that speaks 13 languages and suffers from depression, this man gives us a highly speculative, dystopian futuristic picture of Denmark in 2018 told from the perspective of the year 2331.

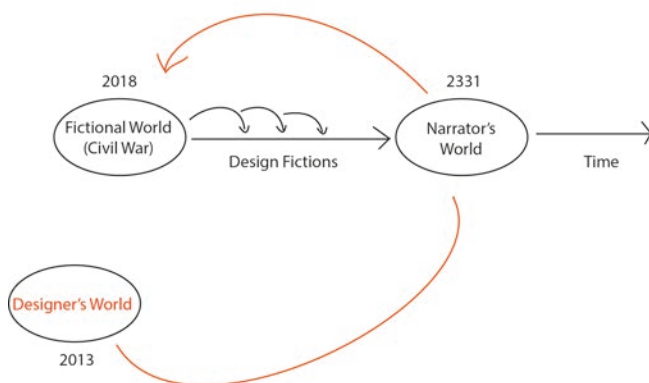


Fig. 1 Network model of accessibility relations

The complex construction cannot be accurately understood as a relation between the simply utopian and the real. Instead we have worked out a network of accessibility relations between the present (the readers or the designers

world) which is year 2013; the distant future where the narrator lives (Narrator’s World) which is year 2331 and the time where the civil war breaks out and which is the period that the aristocrat looks back on (World of the Civil War) which is year 2018 (Fig.1).

This subtle construction can be depicted as in the model represented by Fig. 1. The design students were instructed to use the world of the civil war (from year 2018) as their starting point. Then, a timespan for up to 30 years after the war were set as a timeframe for prototyping design fictions.

A four-step method for prototyping design fictions

In collaboration with the author we worked out a 4-step method for accessing and departing from the civil war journeying into the unknown future. We will explain these four steps and then demonstrate and discuss the result of the workshop exemplified through four chosen prototypes.

Step 1: Writing Phase

After having read a text-fragment from the manuscript *The Civil War in Denmark*, the design students were instructed to produce a mini-scenario (1 page) based on the following instructions:

- Think about an experience or situation in your life that somehow made an impression on you, something that you cannot forget or that seems to stay in your mind for some reason. This situation could be a minor detail, a part of your childhood or something that you remember as being truly odd or strange – perhaps even impossible.
- Write this memory down.
- Place this “strange” memory in the context of *The Civil War in Denmark*, by adding a few sentences that would frame the situation *as if* it was taking place, either before, during or after the civil war (e.g. “...this happened just two years after the war” or “...this made me think about when the war would come to an end” or “...from that moment, I knew that the war was about to begin”).

Step 2: Developing Basic Rules of Fiction

Based on the writings (mini-scenarios) of the design students, a number of so-called “what-if” scenarios were developed in collaboration between design students, design researchers and author.

A “what if”-scenario is an imaginary, sometimes even impossible “basic rule of fiction” that a design fiction can be described according to. Sci-fi movies offers many examples of what-if scenarios: What if everything in our world is information? (Matrix, 2002) or What if the next generation of robots take command on planet Earth? (The Terminator, 1984). Colling Nielsen’s manuscript is built around the scenario: What if Denmark will be thrown into a devastating civil war? A “what-if” scenario reveals a fictitious society – with utopian or dystopian qualities - that we could end up in - or be strongly challenged by (see [15]).

Based on the students writings six different “basic rules of fiction” combined with a number of sub-themes were developed. These basic rules of fiction can be summarized as:

- 1) What if the healthcare system breaks down? Sub-Themes: Do-it-yourself health care, health piracy, home-brewed medicine, re-cycling bodies.
- 2) What if we have completely new family structures? Sub-Themes: New types of homes, new tactics of homing, new forms of socialness.
- 3) What if we live in a society with no money? Sub-Themes: How to add value to things? How do we buy or exchange food, energy or technology?
- 4) What if all animals are needed for something and must have a function? Sub-Themes: How to reduce all animals to either “a service,” “food”, “energy” or as “transport”? How to re-use old technologies or re-invent new ones?
- 5) What if new rituals and religion will be invented? Sub-Themes: What kind of sacred objects or new cultural believes will we be guided by ?
- 6) What if we live in a society in constant war – and must invent new objects for self-defense? Sub-Themes: Fooling tactics, camouflage-techniques, traps, non-violent weapons and new strategies for surviving.

The design students were instructed to work from these basic rules of fictions and sub-themes but now in groups of 3 or 4 persons. They were instructed to:

- State a “what-if” scenario”/a basic rule of fiction. (Here the students were allowed to modify one of the six basic rules of fiction in order to describe - in a more challenging or precise way – the piece of fiction they were aiming for).
- State a design challenge that expresses the purpose of your design and give us a more specified picture of your intentions in terms of manifestation of critique or design aims; for instance what are the possible consequences of your design? Do you want to provoke reactions from those in power? Propose new strategies? Or throw us into a particular time pocket? This self-formulated statement must guide your basic rule of fiction!
- Discuss the world you will design for. Try to answer: What kind of society is your design part of? Who lives in this world? What kind of objects and interactions exist in this world? Who are you designing for? How does the basic rule of fiction manifest itself and what do you (as designer) want others (the users) to feel, go through or experience, through your design?

Step 3: Experimental process of world-making; draw, build, construct, interact and visualize

Having chosen a basic rule of fiction, developed a design challenge and discussed what kind of the world one was

designing for, the process of generating ideas and the process of world-making could start.

In this phase the students were instructed to:

- Draw storyboards
- Build micro-worlds
- Construct objects (that is part of this world)
- Construct interactions (that takes place in this world).

This phase depended on the skills, techniques and methods that the designers were trained in. The illustrators were highly skilled at drawing various storyboards and developing characters that could be part of their world. The graphic designers experimented with graphical prototypes and mock-ups of various types. The interaction designers often used objects, sound, video or enacted situations to prototype and “sketch” various interactions taking place in their world.

Step 4: Prototyping design fiction

After having been through the process of generating ideas and making worlds the students were asked to transfer their ideas into one single concept and to develop one prototype, from their pool of ideas and sketches. A prototype that could live up to the self-formulated design challenge and be described according to one basic rule of fiction and that through its form or the way it was materialized speculate about how a civil war could change the social, economic and cultural structure of Denmark, when exposed to a destructive civil war.

The design students had to end up with one prototype for each group, that is, a graphical prototype, a model, a object (or series of objects) or an enacted situation (documented on video).

Four prototypes of design fictions

In total eight prototypes were developed during the workshop: one video sketch, five graphical prototypes and two worlds build up from a set of objects.

We will describe four of these prototypes by first stating their basic rule of fiction, secondly by giving a short description of the fictional world they represent and thirdly by discussing these according to five given criteria. These five criteria has been outlined in an previous article (see Typology of Design Fictions in [15])

Prototype 1: “Build Your own Island”

What if we live in a society in constant war – and must invent new objects for self-defense?

The civil war in Denmark and the financial crisis spread quickly across the Europe – and soon to the rest of the world. “Build Your Own Island” is a book about how to build a safe place, a safe home, a safe community, for yourself and your fellow human beings.



Fig. 2. Build Your own Island. Left: Bubbling technique”

“Build Your Own Island” is speculating about how to protect and defend yourself when living in a world in constant war. What the book is suggesting is an artificially human-built island, with a modern skyscraper turned upside-down (Fig 2). Huge motors drive the whole island, so that it can sail to the safest areas of the world. The island looks like a “normal” green and lush island but is in fact a machine – a defense system loaded with defense tactics that can protect the island residents from falling into enemy hands.

“Build Your Own Island” involves all kinds of fictional objects and magical powers, such as a bubbling technique (Fig. 2) that can protect you from bomb attacks; a recipe of explosive muffins you can bake and serve for unfriendly guests; or tactics for rain coat camouflage that can be used in all seasons. At the first page of the book you’ll find handwritten names and years, suggesting that the book has been given from family to family from 2018 until year 2073.

Prototype 2: “Re-cycling humans”

What if there are no resources left in the world and you will have to use the human body as a material for crafting garments and artifacts?

During the war the healthcare system collapsed, there were no one to take care of the sick or the wounded. Bodies were scattered around in the streets. There were no families to collect their relatives and simply no resources to perform funerals. After 25 years of war people gave up dealing morally or ethically with the problem. Human bodies were slowly seen as waste, as something you will have to recycle. But how? How far are we actually willing to go when there is shortage of all basic needs in life? The design fiction “Re-cycling humans” is speculating in a highly surrealistic way about the possibility of re-using body parts as an actual material to make something beautiful. It is designed as a manual for women. On the first page is a short introduction:

“This unique user manual is created to respond to the increasing request for instructions and techniques of human re-cycling amongst housewives. It contains 4 useful guidelines and is the first in a series of 10 forthcoming manuals all aiming to provide a wide spectrum of instructions based on Your daily needs”

The book gives guidelines of how to transform bones, skin, teeth and hair into aesthetically pleasing objects such as a fruit bowl, jewelry, a bikini or tailor-made shoelaces. The book has the aesthetics of a sewing-knitting book for housewives from the 1950s – with lots of details of how to get the job done as accurately as possible. Everything in the book seems easy and straightforward, as if re-cycling body-parts is the most natural thing in the world to do.

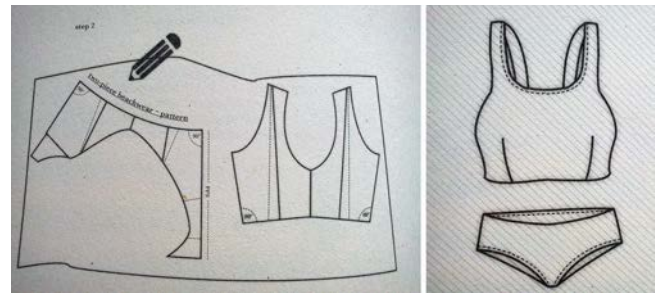


Fig. 3. How to sew a bikini out of skin.

Prototype 3: “Animal Energy”

What if we ran out of energy in 2024 and we will have to use animals for energy production?

In 2024 the energy resources are exhausted, the prices for oil or coal are sky-high and need for affordable energy is huge. “Animal Energy” suggests a simple system of machines and objects that produces energy for households (lamps, ovens, heating of houses etc.). The objects are combined with manuals of how to use these objects.



Fig 4a. Hamster battery and a hyperactive hamster

All objects in Animal Energy involve animals that in different (humoristic) ways produce energy: a hamster that is given caffeine makes energy and charges a battery for a lamp; a rabbit that chew carrots (and whose ears are drawn up every time it stops) produces energy.

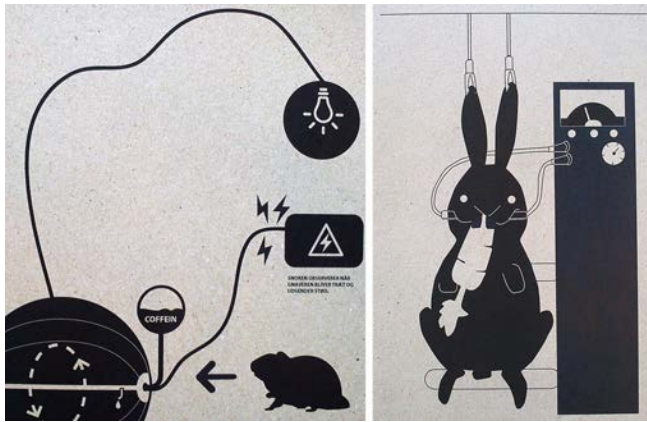


Fig 4b. Instructions of how to use Hamster Battery and The Rabbit Jaw Machine.

For each object the abilities of each animal is well thought of in terms of whether they are good runners, rodents, swimmers, fliers or animals that can lift heavy things or have other capacities. “Animal Energy” is re-using old technologies (animals pulling something) but also inventing new forms, such as “The rabbit jaw machine” where accelerometers have been implanted into the jaws of the rabbit (Fig. 4b)

Prototype 4: “The Ritual of Marriage”

What if new rituals of marriage were invented?

After the war new forms of rituals emerged. One ritual that changed completely was that of marriage. This ritual turned into a bizarre blend of a masquerade and a serious bodily experience that included the sacrifice of a finger. It was to be believed, in this postwar society, that giving each other a ring was not sufficiently expressing trust, commitment and love; one had to make a bodily sacrifice. “The Ritual of Marriage” is a book of instructions that describe the act of this new kind of marriage; a marriage where the bride and the groom must have their fingers cut of as a symbol of their love. The opening page reads like this:

“You shall enter the Cabinet of Execution as the audience demands you to, and you must wear nothing but one glove each. You may stand on both sides of the Rings facing each other, as you shall feel the Minister of Execution perform the Cut. You shall then continue together and enter the Cabinet of Fusion.”

The design fiction suggests that a marriage is not only a promise but also a sacrifice that cannot be “given back” – or be “undone”. The book includes all phases of the ritual and all persons involved (the two beloved, the minister of execution, the carrier, the minister of consumption), the objects (cutting device, cup, gloves etc.) being part of that ritual, as well as the role of the audience of the ritual. The book is set up like a script for a play, visualized in black and white photo-collage combined with simplistic graphics.



Fig. 5. The two beloved.

DISCUSSION

Elsewhere we have developed a fine-grained typology of design fiction [15], which allows researchers to describe and compare different types of design fiction according to five criteria: (1) “What if”-scenarios being the basic construal principle of design fiction; (2) the manifestation of critique; (3) design aims; (4) materializations and forms; and (5) the aesthetic of design fictions. The present work contributes to this typology insofar as we are now able to give a more detailed explanation of the method underlying their construction.

In this article we have thus focused on the ways design fictions can involve different poetic practices. Furthermore, our network model of accessibility relations (Fig. 1) gives a better understanding of how a literary fictional world can be used by designers as a starting point for constructing a whole series of design fictions each of which explore how a dramatic change in a society may effect peoples everyday life and social behavior. In order to see how our case examples deal individually with the consequences of the war, it may be useful to describe and compare the four case projects according to five criteria.

All four cases can have several design aims and several forms of critique. The primary design aim of “Animal Energy” is to make us independent from the (public) energy grid. Secondly it encourages do-it-yourself mentality and in that way “Animal Energy” shares one design aim with “Recycling humans”: they both deal with recycling. In their conceptual use of animals/the human body as part of their design material, “Animal Energy” and “Recycling humans” violate moral and ethical norms - Animal Energy by discharging the well being of animals in a disparate need for energy, re-cycling humans by accepting human bodies as “waste”. In that way they share the same manifestation of critique; by proposing radical living based on recycling, ignoring moral, ethic and political correctness. The two projects are materialized in two different ways: one as a user manual formed as a sewing book and the other as a series of design objects.

“The Ritual of Marriage” explores how a civil war would effect and radical change cultural beliefs and practices by prototyping a new ritual. Like “re-cycling humans” it has the form of a book, yet it uses different aesthetic means. It draws upon the minimalistic aesthetic of the Fluxus movement by using collage in a very conceptual form as a script play (that must be performed) whereas “Recycling humans” uses folklore as a aesthetic for the purpose of throwing us into a particular time pocket, namely that of the 1950s.

“Build your own Island” suggests a new architectural form: a city in the form of an island that is turned upside down. This piece of design fiction is not critical in any political sense; it creates a utopian world of images that despite the horrors of the war suggests peacefulness, harmony like a grass root movement of floating non-violent communities. Like “The Ritual of Marriage” and “Recycling Humans”, it is materialized as a book, but not as a script play or a book of instructions. “Build your own Island” is a survival toolkit designed as a naïve children book that must be given (like a book of prayer) from one generation to the next.

The 4-step method compared to related work

How does our 4-step method relate to the different fictional practices that we have briefly reviewed above: Critical and Speculative design [1], [4], [25], Pastiche Scenarios [6], Poetic Anthropomorphized Technologies [7] and Steampunk as design fiction [5]? In short the 4-step method can be summarized as:

Step 1: Writing Phase

Step 2: Developing Basic Rules of Fiction

Step 3: Experimental process of world-making

Step 4: Prototyping design fiction

If we first discuss the Writing Phase it is obvious that both *Pastiche Scenarios* and *Poetic Anthropomorphized Technologies* have a lot to offer this phase. A mini-scenario can, as we have demonstrated, take it's starting point in unpublished manuscripts as well as an well-known literary work - and in that way be developed as a pastiche. For instance, “Re-cycling Humans” could have – already in the writing phase – been constructed as a pastiche of either a sewing/knitting book for housewives from the 1950s or as a pastiche of the horror movie “Silence of the Lambs” (1991) where a cannibalistic serial-killer is using the skins of his victims to make a dress out of human tissue. “Animal Energy” could have adopted, in its writing phase, the approach used by Morrison; by giving technologies a poetic voice of their own and turning them into characters (for instance by giving the Rabbit Jaw Machine feelings and emotions of its own). Important is, of course, that the design students are taught in advance how to write pastiche scenarios or poetry, since this demands certain writing techniques and literary skills to do so.

Pastiche Scenarios could also have informed Step 2 in bridging character experience and user experience. In this step the designers are discussing and speculating about the bridge between the real world and the fictional world. How does the basic rule of fiction manifest itself and what does the designer want others (the users) to feel, go through or experience, through their design fictions? Here *Pastiche Scenarios* could have been used to give the designers access to the inner aspects of the user experience and dive, so to speak, into the emotional lives of their fictional users. For instance “The Marriage” could have been formed as a pastiche of Shakespeare’s *Romeo and Juliet* to give us more information about the couple being married. Or a *Pastiche Scenario* could have been used to give us more information about the families who have implemented “Animal Energy” in their post-war homes. What kind of families are these? Who live in such home? What kind of experiences are they going through?

Steampunk is a poetic practice that easily could have been applied as a design strategy in Step 3 by putting emphasis on a specific choice of materials (e.g. re-cycled metal, leather, brass, glass). By adding *Steampunk* as a poetic practice to for instance “Animal Energy” the designers could have evoked an alternate history (through their design fiction) and thrown us into the particular time pocket of the Victorian Age. This could have guided their experiments and explorations of the Animal-Energy objects in the direction of the Victorian adventure novels (and the 19th century laboratory) – and in that way criticize our modern over-digitalized society by bringing back the “do-it-yourself mechanical high-tech” as a solution to the exhausted energy resources.

Speculative design could have informed Step 4 in many ways, for instance through the techniques of “crafting the speculation”, suggested by Auger [4]. In Auger and Loizeau it is exemplified in their inviting colleagues to write future scenarios of what they would do with the Afterlife battery of a loved one. The designers of “Build Your Own Island” could have brought their book of survival to children living in troubled areas of the world or troubled neighborhoods of the large cities, in an attempt to make them comment on the defense tactics and objects for self-defense – this is to further “craft the speculation”.

While these related fictional practices in interaction design can thus inform our 4-step method, our approach also have some offerings. First of all, our 4-step method does not rely on advanced writing skills. In this way, it differs from pastiche scenarios and poetic anthropomorphizing of technology. Working out a good pastiche scenario takes time and effort and requires a thorough understanding of the fictitious character being chosen for the scenario.

Secondly, our approach contributes with various techniques of world making, whereas the approaches in Blythe and Wright and Morrison et al.’s create scenarios primarily through dialogue and character’s streams of consciousness.

But taken together these techniques offer a promising methodology for prototyping speculative futures.

Finally, in contrast with Tanenbaum et al. our approach is not restricting design fiction to a particular style and aesthetics and it is also free from any ideological missionizing of taking technology design back to the golden days of previous eras.

CONCLUSION

In this paper we have given an integrative account of the methodological interconnection between poetics and design practice, between the writer and the designer. In so doing, we are not only making a plea for the usefulness of Sterling's original conception of design fiction. We also contribute with new knowledge to existing research on design fiction in several respects.

First, we offer a precise definition of design fiction, not as a blurred indeterminate realm in-between reality and utopia, but as a possible world, which can be account for in terms of accessibility relations. The network model of accessibility relation is built up from a single case, but it nevertheless indicates a way of mapping possible futures on a timespan.

Secondly, we have remedied Grand & Wiedmer's method toolbox. While Grand & Wiedmer list what techniques and tools the designer already use, we show instead how and for what purposes these tools can be used in design fiction.

Thirdly, in contrast to DiSalvo, who deals primarily with how figurative meanings influence our aesthetic reception of design fiction, we have demonstrated how poetic techniques can integrate with processes of making. For constructive design research, which considers such processes to be a legitimate method of inquiry, it is a prerequisite for developing an adequate methodology of design fiction.

What we did not have enough space to discuss is the type of knowledge that design fiction may embed and how we should to evaluate the value of such knowledge in design research. Such a discussion will be postponed for future work. Here, we have laid out the steppingstones towards developing a poetics of practicing design fiction, which together with our typology [15] can serve as an initial framework for design researchers.

REFERENCES

1. A. Dunne, *Hertzian tales: electronic products, aesthetic experience, and critical design*. London: RCA CRD research publications, 1999.
2. J. Bleecker, "Design Fiction: A short essay on design, science, fact and fiction," *Future Lab.*, vol. 29, 2009.
3. S. Grand and M. Wiedmer, "Design Fiction: A Method Toolbox for Design Research in a Complex World," in *proceedings of the DRS 2010 conference: Design and Complexity*, Montreal, 2010.
4. J. Auger, "Speculative design: crafting the speculation," *Digit. Creat.*, vol. 24, no. 1, pp. 11–35, 2013.
5. J. Tanenbaum, K. Tanenbaum, and R. Wakkary, "Steampunk as Design Fiction," in *Proc. CHI'12*, Austin, Texas, 2012, pp. 1583–1592.
6. M. A. Blythe and P. Wright, "Pastiche scenarios: Fiction as a resource for user centred design," *Interact. Comput.*, vol. 18, pp. 1139–1164, 2006.
7. A. Morrison, R. Tronstad, and E. S. Martinussen, "Design notes on a lonely drone," *Digit. Creat.*, vol. 24, no. 1, pp. 46–59, 2013.
8. A. Kirby, "The Future is Now: Diegetic Prototypes and the Role of Popular Films in Generating Real-World Technological Development.," *Soc. Stud. Sci.*
9. B. Johnson, *Science Fiction for Prototyping: Designing the Future with Science Fiction*. San Francisco: Morgan and Claypool, 2011.
10. B. Sterling, L. Wild, and P. Lunenfeld, *Shaping things*. MIT press Cambridge, MA, 2005.
11. J. Verne, *Twenty thousand leagues under the seas*. Oxford University Press, 1998.
12. L. T. Sargent, *Utopianism*. New York: Oxford University Press, 2010.
13. H. A. Simon, *The sciences of the artificial*. The MIT Press, 1969.
14. K. C. Nielsen, *Mount København*. Copenhagen: Gyldendal, 2010 (in Danish).
15. E. Knutz, T. Markussen, and P. Christensen, "The Role of Fiction in Experiments within Design, Art & Architecture," presented at the Nordic Design Research, Copenhagen & Malmö, 2013.
16. Plato, *Republic 10*. Cambridge Univ Press, 1988.
17. E. Auerbach, *Mimesis: dargestellte Wirklichkeit in der abendländischen Literatur*. Francke, 1964.
18. M.-L. Ryan, *Possible worlds, artificial intelligence, and narrative theory*. Bloomington: Indiana University Press, 1991.
19. L. Dolezel, *Heterocosmica: Fiction and possible worlds*. Johns Hopkins University Press Baltimore, 1998.
20. T. G. Pavel, "'Possible Worlds' in Literary Semantics," *J. Aesthet. Art Crit.*, vol. 34, no. 2, pp. 165–176, 1975.
21. C. DiSalvo, "Spectacles and Tropes: Speculative Design and Contemporary Food Cultures," *Fibreculture J.*, 2012.
22. L. Nielsen, "From user to character - an investigation in user-descriptions in scenarios," presented at the DIS2002, London, 2002, pp. 99–104.
23. A. L. Cooper, *The Inmates are Running the Asylum: Why High-Tech Product Drive Us Crazy and How to Restore the Sanity*. Indianapolis: Sams, 1999.
24. K. C. Nielsen, *The Civil War in Denmark*. København: Gyldendal, n.d (unpublished manuscript).
25. A. Dunne and F. Raby, *Design noir: The Secret Life of Electronic Objects*. Basel: Birkhäuser, 2001.