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The Role of Fiction in Experiments within Design, Art & Architecture

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ABSTRACT

This paper offers a typology for understanding design fiction as a new approach in design research. The typology allows design researchers to explain design fictions according to 5 criteria: (1) "What if scenarios" as 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 typology is premised on the idea that fiction may integrate with reality in many different ways in design experiments. The explanatory power of the typology is exemplified through the analyses of 6 case projects.

INTRODUCTION

Within the last couple of years there has been an increased interest in Design Fiction as a new practice or approach within design research (Bleecker, 2009; DiSalvo, 2012; Grand and Wiedmer, 2010). Ever since the advent of modern design, designers have used fiction as a technique for experimenting with alternative models for society or for criticising existing ones. The imaginary urban projects of the Futurists proposed a city where machines enabled radically new forms of architecture and infrastructure, and in the 1920s Norman Bel Geddes envisioned what at that time must have looked like an utopian idea: gargantuan airliners transporting people across the Atlantic. The ability to use design fictions for speculating about alternative presences or possible futures is at the core of design practice. What is new is that it is now claimed also to be a viable road for producing valid knowledge in design research (Grand & Wiedmer, 2010).

In this paper, we argue that in order to establish design fiction as a promising new approach to design research, there is a need to develop a more detailed understanding of the role of fiction in design experiments. Some attempts have already been made. DiSalvo (2012) thus accounts for two forms of design fiction in terms of what he calls 'spectacle' and 'trope'. While DiSalvo makes a valuable contribution, his treatment is too limited for understanding other forms of design fiction. Grand & Wiedmer (2010) propose a method toolbox for practicing design fiction in design research, but in fact they say very little about the particularities of this approach. Only that it may take the form of 'criticising existing technologies' as in critical design, 'asking unanswerable questions' or 'reinterpreting the past' by transforming what is into what could be.

We offer a typology, which allows us to explain design fictions according to 5 criteria. The typology is premised on the idea that fiction may integrate with reality in many different ways in design experiments. Since design fictions can take many forms and variations, it is simply impossible to cover them all in the stroke of one paper. Our typology is built up from 6 case projects, all of which use fiction in design experiments offering alternative models for designing

the urban environment. This typology should be thought of as an initial first step towards building a more exhaustive framework.

We start out by defining design fiction and discussing the role of fiction in relation to experiments in design research. Next, we account for how design fiction is manifested in the 6 case projects. On the basis of our case analyses we present a table offering an overview. Finally, we critically discuss our typology in relation to related work.

DEFINING 'DESIGN FICTION'

It is the sci-fi author Bruce Sterling who originally coined the term Design Fiction. In *Shaping Things* Sterling (2005) makes the observation that designers share many interests with science fiction writers, most importantly a deep engagement with imaginary objects and speculations about the future to come. But there is a core distinction as well between design and science fiction: "Science fiction wants to invoke the grandeur and credibility of science for its own hand-waving hocus-pocus", while design fictions are typically more practical, more hands-on. More precisely, Sterling defines design fiction as "*the deliberate use of diegetic prototypes to suspend disbelief about change…It means you're thinking very seriously about potential objects and services and trying to get people to concentrate on those - rather than entire worlds or political trends or geopolitical strategies. It's not a kind of fiction. It's a kind of design. It tells worlds rather than stories* (Sterling, 2009).

Examples of such diegetic objects would be Auger & Loizeau's proposal for a battery laden with energy made up from acid left in the stomach of deceased family members from their last supper, which relatives are given instead of a urn. Or Eduardo Kac's gene manipulated rabbit Alba that glows up in a green fluorescent colour, because it has been cloned with the GFP gene from deep-sea jellyfish. In the first instance, design fiction speculates on energy being a hollow force and suggests changes to our culturally entrenched rituals. In the second, design fiction is used to question the limits and consequences of gene modification and biotechnology.

Common for all design fictions is that they can usually be described according to a basic rule of fiction, an imaginary, sometimes even impossible "what if"-scenario. These scenarios are fictitious worlds that give utopian or dystopian images of a possible future that we as humans could end up in – or be challenged by. Try to think of sci-fi films and the "What if"-scenarios", they play out: What if we were able to predict crime before they are committed? (*Minority Report*, 2002) What if we can travel into an alternate presence by downloading human consciousness into a computer? (*Avatar,* 2009) What if everything in our world is information? (*Matrix*, 1999) What if women loose the ability to give birth? (*Children of Men*, 2006) What if next generation robots took command on planet Earth (*The Terminator*, 1984) What if robots

will look exactly like humans – so much that we can fall in love with them? (*Blade Runner*, 1982) What if the Earth will get too polluted to live on – and we will have to build new cities elsewhere in the universe? (*WallE*, 2008).

Design fiction raises the question of how what-if scenarios set up conditions for experimenting with and prototyping of possible futures in design practice as well as in design research. To answer that question it seems fruitful to inquire into the relation between fiction and experiments. How to prototype the future through experimentation?

PROTOTYPING THE FUTURE THROUGH EXPERIMENTS

Experimentation is an essential human skill useful for understanding our images of reality and the validity of scientific theories about the constitution of the world. Experiments played a crucial role in Galileo's rejection of Aristotle's law of gravity. Also the works by for example Newton, Einstein or Leonardo da Vinci were based on experimental approaches. Experiments are central for many sciences, yet, we know very little about the role of fiction in these experiments. Fiction is not restricted to some whimsical ideas of the authors mind. A "wormhole", which is a concept in Einstein's theory of relativity (the correct scientific label is the 'Einstein-Rosen Bridge'), is as fictitious as the notion of "cyberspace" in William Gibson's novel *Neuromancer*.

However, the purpose of using fiction in experiment in natural science is different from design, art and architecture. Here experiments are carried out with the goal of verifying, falsifying, or establishing the validity of a hypothesis (Koskinen et al., 2011; Steffen, 2012). The experiment can thus be seen as a method of testing - with the goal of explaining – a scientific view of how the world *is*.

In design, art and architecture the experiments take on a different role. In these practices the experiment is used primarily to construct images of future realities or opportunities in contrast to present realities. In design practice experimentation can serve a range of functions, for instance (i) trying out ideas about how to shape the future into a preferred state (Simon, 1969); (ii) criticising how capitalist interests, technology or design ideology constrain our everyday life (Dunne and Raby, 2001; Dunne, 1999); (iii) as a central tactic in urban interventions for promoting social change (Markussen, 2013). In design research and artistically inclined research practices, experiments typically serve an additional purpose, namely that of shedding light on specific research questions (Brandt and Binder, 2007; Niedderer and Roworth-Stokes, 2007). For instance, in Auger & Loizeau's *Audio Tooth Implant* experiments were used to explore a post-humanist future where the human body has been augmented through technology. But they were also addressing a design research question: What are the ultimate consequences of shrinking mobile technologies?

It is through the experiment that designers, architects and artists can explore critical questions, or address particular phenomena or aspects of our lives, investigate problems or remove problems. Sometimes these experiments lead to a better world, a higher quality of life. Sometimes they seem to do the opposite: create new problems. This paper will not evaluate this aspect of the experiment. Our aim is instead to increase knowledge of how fiction can be used as part of experimenting in design research. We believe that the best way of gaining this knowledge is to start by analysing how fiction is at stake in 6 selected case projects. By 'fiction' we do not understand that which is non-real. Rather we find it seems more meaningful to operate with a continuum of fictionality, which design fictions can embed either conceptually or materially. At one end of the scale we would have the purely speculative realm of design proposals that never sees the living daylight. At the other end, design fictions materialized to various degrees in the form of working prototypes, para-functional objects, or even entire cities. Rather than characterizing fiction in terms of existence, we find it more meaningful to understand fiction according to two opposite aims of constructing them: utopia and dystopia.

UTOPIAN AND DYSTOPIAN EXPERIMENTS IN ARCHITECTURE, ART AND DESIGN

Utopias have existed since the beginning of humanity. The first writing known is Plato's book The Republic dating back to 380 B.C., and much later Thomas Moore's *Utopia* from 1516. The questions spurring the construction of *utopias* are timeless: How to make the world better? How can we be living differently, with different economics system, scientific progress, human evolution, different political aspect – and perhaps new values?

An utopia can be defined as an ideal community or an imaginary society or place that contains highly desirable or perfect qualities. Qualities that make us feel good and happy. An utopia is therefore often a highly pleasant place, a positive place, a place that makes us feel comfortable. Utopia is also the place of freedom – a place we can fully enjoy, have fun in and relax in. A dystopia is, like utopia, an imaginary society or place – set in a speculative future, characterized by elements that are opposite to those associated with utopia. Dystopias contain qualities that make us feel uncomfortable or bad; that gives us the feeling "that we shouldn't be there". A dystopia is a place in which people live dehumanized or fearful lives, in which everything seems unpleasant or uncanny (as we know it from many science fiction films). Dystopias contain – directly or indirectly – a critique of our society – as it is today.

The boundary between utopia and dystopia is not clear-cut, as the reader will experience through our pool of examples, many projects includes both utopian and dystopian qualities. That is, they involve utopian qualities – but are at the same time critical. The question is: critical in relation to what? What types of fiction do they represent?

Design Fiction whether in the form of utopian or dystopian experiments deals with the imagination and materialization of possible futures. But what is the role of fiction in these possible futures? We are aiming at developing a more detailed understanding of the role of fiction in design experiments by using the following 5 criteria: (1) "What if"-scenarios as 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. Below we will briefly present a series of Design fiction projects – and then from these projects draw a typology based on the above-mentioned criteria's. This typology is by no means exhaustive. It will be elaborated on in future articles

Examples of utopian projects are the capital of Brazil *Brasilia* designed in an attempt to make a perfect, functionalist city (1960); No-Stop City by Archizoom, which manifests a designerly critique of the standardisation implicit in functionalist architecture and modernist urban planning; the free-town of *Christiania* in Copenhagen designed by ordinary people in an attempt to build a "free" city based on do-it-yourself mentality (1971)*;* the artistic, anarchistic state "AVL-Ville" in the port of Rotterdam, designed by artist and designer Joep van Lieshout (2001); the highly experimental buildings by Michael Reynolds, build from recycled materials, operating off the formal electricity grid, requiring little money to build; and the "Protofarm 2050: The Guide to Free Farming" (2009) by 5.5 Designer, which is about how to survive in Paris in year 2050.

CASE 1: BRASILIA (THE PERFECT CITY)

The inauguration of Brasilia – the capital of Brazil - took place on the 22nd of April 1960. Five years before this central area of Brazil was nothing more than a desert. The city plan was developed Oscar Niemeyer as the main architect, Lúcio Costa as the urban planner and Roberto Burle Marx as the landscape designer. This giant project was decided upon by former president of Brazil, Juscelino Kubitschek, who became President in 1956. He invited the best Brazilian architects to present their projects for this new capital, which (like Dubai) rose from the desert in fast tempo. When seen from above, Brasilia resembles an airplane or a butterfly with a combination of straight and rounded shapes. The city is divided into areas where people live, with sporting and leisure area's – as well as strokes of commercial areas; a highly organized, functionalist city with no likeness to the surrounding regions, which is characterized by poverty, disorganization and unstructured urban areas. Brasilia manifests the design rationale inherited from Le Corbusier and perhaps stated most explicitly in the Athen Chartre. According to this rational the city should be divided into work-zones, living-zones and leisure-zones, combined with highways, public

buildings and commercial areas. Everything is planned – nothing is left to coincidence. It demonstrates at that time a complete new architectural form, and calls into question the medieval city.

Figure 1: Brasilia, Brazil

CASE 2: ARCHIZOOM (THE CRITICAL EXPERIMENT)

The Italian design studio Archizoom Association was founded in 1966 by the four architects Branzi, Corretti, Deganello, Morozzi, and two designers: Bartolini and Bartolini. The team produced a rich series of projects in design, architecture and large-scale urban visions.

The project "No-Stop City"(1969) is a vision of a quality-less city, in which the individual can achieve his own housing conditions. It is a model of global urbanization, which is organized the same way as a factory or a supermarket. It presents an iterative pattern with multiple centres and neutral, even and unbroken lines. "No-Stop City" offers itself as a kind of car park filled out with inhabitable furniture whose use can be adapted to the circumstances.

"No-Stop City" criticizes the perfect, ideal, modern city build from economic interest and consumerism only. It asks: What if our cities (and our lives) where organised as if we live in a supermarket or in a car park? What kind of view on human nature does such a city represent? What will we become when living in such places? "No-Stop City" is a post-modern and highly fictional vision that contains a direct critique of the inherent design rationale of modernism (cities such as Brasilia and Chandiargh). "No-Stop City" only exists as a model.
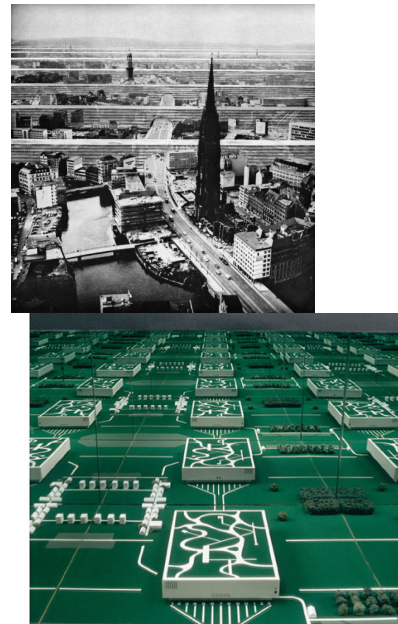

Figure 2: Archizoom, No-stop city

CASE 3: CHRISTINIA (THE SOCIAL EXPERIMENT)

In 1971 a group of young people broke down the fences of an old military terrain in Copenhagen. At first just to squat a playground for their children and not as such an organised act, but more like a protest against the lack of affordable housing and playgrounds in Copenhagen. A month later the free city called *Christiania* was born; an self-proclaimed autonomous area of Copenhagen, which with the years contained café's, self-made houses in all kinds of shapes, bakeries, kindergartens, different kinds of shops, yoga-center, theater – and a free trade of cannabis. The city of Copenhagen looks at Christiania as a large commune, and it is regulated by the so-called Christiania Law of 1989. But - since it's beginning, the discussion on the legal status of the community has been on-going.

In it's starting point the young people of Christiania had a dream; they wanted to create a free city with space for everybody. Where you can build your own house, open a workshop if you like, and live in a commune with shared responsibility. They were ready to commit themselves to this utopian project that was not planned (in its beginning), but rose from a local involvement, from the urge for a more progressive and liberated life-style - and affordable housing. Today, around 850 people live in Christiania.

Figure 3: Christiania, Copenhagen

Figure 4: AVL-Ville, Rotterdam

CASE 4: JOEP VAN LIESHOUT (THE ANARCHISTIC EXPERIMENT)

In 2001 the artist Joep van Lieshout (operating under the name Atelier Van Lieshout) realised AVL-Ville – a 'micro state' in the port of Rotterdam with its own constitution, currency and flag. The village contained several workshops, production areas as well as areas where people could live, sleep and eat.

By developing an alternative resource power plant, septic tank and water purification system AVL-Ville was independent from the public energy-grid. The workshops were both functional and fictional, such as the workshop *Alcohol & Medicine* or for the workshop for *Weapons & Bombs*. The last one contained a metal workshop and chemical laboratory where weapons and bombs could be made from simple household chemicals. These weapons and bombs could be used for defence as well as attacks. AVL-Ville was closed down by the Dutch Government after just one year, but Joep van Lieshout transferred his interests in investigating new possibility of urban living into other projects.

AVL-Ville was challenging – through art - the idea that it is the state that control the laws that we live by – and which we organize our daily lives according to. It was an inhabitable experiment, not just to look at, but also to be lived in and lived by. As an experiment it provoked reactions from the Dutch politicians to consider the laws, they themselves have produced; laws about weapon, alcohol, drugs, energy or money.

CASE 5: THE GARBAGE WARRIOR (EXPERIMENTS WITH SUSTANIBILITY)

Michael E. Reynolds, who was portrayed as The *Garbage Warrior* in a documentary from 2007, is an American architect based in New Mexico and a proponent of "radically sustainable living". The past 40 years he has been developing self-sufficient houses and experimental living concepts that require little or no mortgage payment and no utility bills.

Reynolds, builds material from recycled material, he creates houses that can operate off the formal electricity grid and that requires little money to build. He has a social mission: no one on the planet of earth should be without a home. He wants to empower people who have nothing to build their own house. Reynolds's living concepts represents the idea that even in a polluted world and in poor regions of our world there is room for everybody – and that by helping each other, and by using local materials people can overcome poverty and create a home. He calls his practice *Earthships*. Earthships are type of houses made of natural and recycled materials.

Though many of Reynolds's living concepts have been carried out the last 40 years – the State Architects Board of New Mexico took away Reynolds's credentials in 1990 (saying his constructions were illegal and unsafe). However, his license was reinstated in 2007. He resumed building Earthships around the world – homes that take advances of local resources and which require no mortgage and no bills.

Figure 5: Reynolds, inhabitable prototypes called "Earthships"

CASE 6: PROTOFARM 2050: THE GUIDE TO FREE FARMING (EXPERIMENTING WITH ECO-STRUCTURE)

The project "Protofarm 2050: The Guide to Free Farming" (2009) by 5.5 Designer, is about how to survive in Paris in year 2050.

It is definitely not Paris, as we know it. In Paris in year 2050 the shortage of food is the overall problem; the citizens must hunt their own food (birds, rats, insects), they must take advances of the plants and weed that the city can offer – and they must cook and prepare their food under new (extreme) conditions. The project has the form as a handbook full of techniques for hunting, catching and cooking, set in the unfamiliar urban environment of Paris in year 2050.

Protofarm 2050 generates pre-emptive solutions to a predicted problem of the future: the problem of food shortage. It is critical by suggesting: What if in the future our society will suffer from complete shortage of food and therefore we will have to return to an old social-economical structure: that of a hunter and gather society? It is engaging – in an ironic kind of way - with issues of food security and resourceful environmentalism.

"Protofarm 2050: The Guide to Free Farming" was commissioned by ICSID for the World Design Congress in Singapore 2009.

Figure 6: Protofarm 2050: The Guide to Free Farming

On the basis of these case analyses, we propose the following typology represented in Table 1:

1. Basic Rule of Fiction (What if-scenario?)	- What if we turn a desert into a hyber-modern, functionalistic city, divided into work & living zones? - What if our cities (and our lives) were to be organized as if we live in a supermarket - what do we become? - What if we create a freetown where everybody can feel free to work, build their own house and live as they wish? - What if we can build houses that enables us to become independent from the energy-grid? - What if we can build homes that makes use of local resources and require no mortage and no bills? - What if we in the future will have to return to older social-eco systems or old tecnologies, in order to survive?
2. The manifestiation of critique (How is it critical?)	- By propagating Modernism as the universal answer to urban planning, ignoring existing local structures. - By giving an internal critique of the dominating arcitecture, art and design practice. - By demonstrating experimental forms of living based on social involvement and shared responsibility. - By challenging the idea that it is the state that sets the laws that we live by. - By proposing radically sutainable living based on recycling. - By vizualizing the consequences of shortages of food, energy, pollution or other direct threaths. - By predicting the impossible.
3. Design aims (What are the possible consequences?)	- To demonstrate a complete new design or architectural form. - To encourage do-it-your-self mentality. - To provoke reactions from those in power through art, design or architecture. - To make us independent from the energy-grid. - To make us independent from money & consumer-grid. - To take advances of local resources. - To recycle old technologies & prototype new technologies. - To throw us into a particular time pocket. - To make us believe in the impossible.
4. Materialization & form (How is it visualized?)	- As a model or prototype. - As a advanced, inhabitable or usable prototype. - As an entire city or a prototype to be lived in.
5. Aesthetic of Design Fiction	- Modernism (functionalism, streamline). - Post-modernism (irony, pop, kitch). - Grassroot-movement (folk-culture, do-it-yourself). - Disruptive aesthetic (activism, anarchism, critical design). - Sustainability (re-cycling, resourceful environtalism). - Science Fiction (thinking the impossible).

Table 1: Typology of Design Fiction

Table 1 offers a typology of design fiction, according to 5 criterias. The table informs us how fiction might integrate with reality in different ways: (1) "What if scenarios" as 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. All six cases fulfil the 5 criteria by suggesting one or more examples from the Typology of Design Fiction.

For instance, *Protofarm2050* (case 6) has as its Basic Rule of Fiction: "What if in the future our society will have to return to an old social-economical structure in order to survive"? It is critical by visualizing the consequences of shortages of food. The project wishes to exploit local resources – and place us in a particular time pocket (that of a hunter-gatherer society). *Protofarm2050 is* materialized as a prototype (handbook of instructions) using an aesthetic that can be referred to as "post-modernism", since it uses irony and parody as its main strategy.

In the project *Brasilia* (case 1) fiction integrates with reality in a completely different way: Brasilia has as its basic rule: What if we turn a desert into a hyper-modern, functionalistic city, divided into work and living zones? It is critical by ignoring the existing local structures (of architecture in Brazil at that time) by molding new modern mega structures into the landscape. It propagates Modernism as the universal answer to urban planning. As a design aim, it wants to demonstrate a rigid totalitarian design program, materialized as an entire city, using an aesthetic that can be referred to as high 'modernism'.

By using our typology the role of fiction becomes more particular and it is possible to distinguish and compare one design fiction-project from another.

It is interesting, for instance, to see that both *Garbage Warrior* (case 5) and *AVL-ville* (case 4) share the same design aim in wanting us to be independent from the energy-grid – but uses different aesthetic means (Sustainability versus Disruptive Aesthetics). In the same line of thoughts *Garbage Warrior* (case 5) share the same aesthetic means as the project *Christiania* (case 3), namely Sustainability (re-cycling, resourceful environtalism) as well as Grassroot-movement (folk-culture, do-it-your-self), but again these two projects has different design aims (*Christiania* does not wish to be independent from the energy-grid).

DISCUSSION
Our typology is not in any way meant to be exhaustive, as the elaboration of its five basic criteria depends on only 6 case analyses, which are even limited to projects and interventions oriented towards urban space. However, what it suffers from in terms of comprehension, it gains from the level of detail acquired in understanding the particularities of design fictions as an approach. This is an improvement compared to existing research literature.

In their proposal for a method toolbox, Grand & Wiedmer (2010) randomly detects some characteristics of approaches, which engage in design fiction. One is critical design where design fiction is often used to encourage critical reflection upon how technologies influence and constrain our everyday lives. The second is the Dutch architecture bureau MVRDV's method of posing "unanswerable questions". The third is described as the technique of projecting outworn societal models into the future. Such a characterization does not provide any coherent or systematic understanding, but points in too many incompatible directions: the effect of design, a mode of asking, and the re-configuration of time. In contrast to Grand & Wiedmer who characterize the approach by individual designers, our typology is based on insights into how fiction may integrate with reality through design experiments.

DiSalvo (2012) defines design fiction as either spectacles or tropes. In so doing, he draws on theoretical concepts external to design practice. By categorization design fiction as a spectacle he equals design fiction with tactics of estrangement so dear to the Situationist art movement. By understanding design fictions as tropes he sees design practice as a verbal 'figure of speech', a rhetorical practice as it is defined in literary theory.
Our typology is developed out of a careful analysis of the inherent experimental logic of design fiction as they are constructed in design projects. In so doing, we use principles and criteria from design practice (aesthetics, materializations, design aims) as our main distinctive traits.

CONCLUSION
The typology in this paper is meant to be the first stepping-stone towards building a more comprehensive framework for understanding design fiction as a new approach in design research. In addition to the projects discussed here, we would have liked to examine design projects focusing for instance on the techno-culture through experiments with computational artefacts and body-machine hybrids as well as game-based design. Such an investigation will be the topic of future work.

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