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 constructional 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 six case projects.

Keywords: design fiction, design experiments, fictional practices, utopianism, prototyping futures

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 (Auger, 2013; Bleecker, 2009; DiSalvo, 2012; Grand & Wiedmer, 2010; Markussen & Knutz, 2013; Morrison, Tronstad, & Martinussen, 2013). Ever since the advent of modern design, designers have used fiction as a technique for experimenting with alternative models for society or for criticizing 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 ‘tropes’. 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 ‘criticizing existing technologies’ as in critical design, ‘asking unanswerable questions’ or ‘reinterpreting the past’ by transforming what is into what could be. Such explanations do not provide any systematic understanding of the relation between fiction and design experiments. What is required is more knowledge of how fiction features in the designer’s speculation, experimentation and materialization of possible futures.

The purpose of this article is to shed light on this question by critically examining the role of fiction in a number of utopian projects within design, art and architecture. On the basis of this study, we have been able to construct a typology, which allows us to characterize the role of fiction in design experiments 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 six 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 six case projects. On the basis of our case analyses we then present the typology 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 color, 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. Consider for instance 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 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 Leonardo da Vinci, Newton, or Einstein were based on experimental approaches. Experiments are central for many sciences, yet, we know very little about the role of fiction in these experiments. Typically the term ‘fiction’ is associated with something being untrue or unreal, conceived of as some whimsical ideas of an author’s mind. But fiction and imaginary constructs such as metaphors play a central role in scientific experiments. A “wormhole”, which is a highly speculative concept found in Einstein’s theory of relativity (the correct scientific label is the ‘Einstein-Rosen Bridge’), is, in a sense, as fictitious as the notion of “cyberspace” in William Gibson’s novel *Neuromancer*. Wormholes presuppose the imaginary what-if scenario of space and time being folded into one another in outer space (as “space-time”), while cyberspace presupposes the idea that electrical circuits and data transmission can be conceived of as an information space through which humans are able to travel at different speeds.

However, the purpose of using fiction in experiments in natural science is obviously 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, Zimmerman, Binder, Redström, & Wensveen, 2011;
In design, art and architecture the experiments take on a different role (Steffen, forthcoming). 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) criticizing how capitalist interests, technology or design ideology constrain our everyday life (Dunne & 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 & Binder, 2007; Niedderer & 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 analyzing how fiction is at stake in six selected case projects. By ‘fiction’ we do not understand that which is non-real. Rather we find it 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 see 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 (Sargent, 2010). The questions spurring the construction of utopias are timeless: How to make the world better? How can we live differently, with different economics system, social institutions, scientific progress, human evolution, different political governance – 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 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 include 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 crafting these possible futures?

We are aiming at developing a more detailed understanding of the role of fiction in design experiments by using the following five criteria: (1) What-if scenarios is the basic constructional 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 analyze a series of design fiction projects and from this analysis draw a typology based on the above-mentioned criteria. This typology is by no means exhaustive. It will be elaborated on in future articles.

Our examples of utopian projects are *Brasilia*, the capital of Brazil, which was designed in an attempt to make a perfect, functionalist city (1960); *No-Stop City* by Archizoom, which manifests a designerly critique of the standardization 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 a pervasive do-it-yourself culture (1971); the artistic, anarchistic state *AVL-Ville* in the port of Rotterdam, designed by artist and designer Joep van Lieshout (2001); the highly experimental *Earthship* buildings by Michael Reynolds, built from waste and recycled materials, operating off the formal electricity grid, and 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, the site of Brasilia was nothing more than a desert. The city plan was developed by chief architect Oscar Niemeyer, Lúcio Costa was the urban planner and Roberto Burle Marx was 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 areas as well as commercial areas; a highly organized, functionalist city with no likeness to the surrounding regions, which is characterized by poverty, disorganization and unstructured urban sprawl.

Brasilia manifests the design rationale inherited from the high Modernism of Le Corbusier, which is perhaps stated most explicitly in the *Athens Charter*.
originally published in 1943. According to this rationale the city should be divided into *functional zones* defined by homogeneous activities such as work-zones, living-zones and leisure-zones. Furthermore, the zones should be connected through an effective infrastructure consisting of boulevards and highways that allowed motorized transport between the different zones.

The role of fiction in Brasilia

Brasilia can be seen as a large-scale experiment realizing some of the utopian urban visions of Le Corbusier. In the 1920s, with his proposal for *Ville Radieuse*, Le Corbusier speculated on building what he imagined would be an ideal city, organized according to linear lines and abstract Cartesian geometries. Being inspired by this urban utopia (see Figure 1), Niemeyer and his team embarked on founding a new capital and their project was based on a simple what-if scenario: What if we can turn a desert into the ideal functionalist city in just 5 years? Fiction here is to be found in the utopian design and construction of a “perfect” new capital that makes the world “believe in Brazil” in terms of progress and wealth. The design aim of such an architectural experiment is to demonstrate efficiency, and the benefits of standardization and “form follows function”. The modernist city represents a critique of the center-periphery infrastructure and urban planning inherited from the medieval city. However, Le Corbusier’s utopian visions turned out to be experienced as dystopian by many of the inhabitants in Brazil. The city to a large extent neglected life at a human scale and didn’t easily accommodate to the dramatic increase in new arrivals in the following decades.

Case 2: No-Stop City (the critical experiment)

The Italian design studio Archizoom Association was founded in 1966 by the four architects Andrea Branzi, Gilberto Corretti, Paolo Deganello, Massimo Morozzi, and two designers: Dario Bartolini and Lucia 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 city without qualities, in which the individual can create his own housing conditions. It is a model of global urbanization, which is organized in the same way as a factory or a supermarket. It presents an iterative pattern with multiple centers and neutral, even and
unbroken lines. *No-Stop City* offers itself as a kind of car park filled out with inhabitable furniture, the use of which can be adapted to the circumstances.

*No-Stop City* is a post-modern and highly fictional vision that was launched as a direct critique of the inherent design rationale of modernism (cities such as Brasilia and Chandigarh). The critique here does not consist in replacing modernism with a new architectural language or style, but rather as an speculative experiment that takes the logic and consequences of modernist thinking to their utmost extreme (standardization, uniformity, abstract geometries, etc.). *No-Stop City* only exists as a model of an urban vision. It was never meant to be build.

The role of fiction in *No-Stop City*

*No-Stop City* can be characterized according to the following rule of fiction: What if our cities (and our lives) where organized 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* criticizes the perfect, ideal, modern city built from economic interest and based on consumerism only and the design aim is to provoke reactions from the design community as well as from those in power (city-planners, government members and (local) politicians).

Case 3: Christiania (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 organized 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; a self-proclaimed autonomous area of Copenhagen, which over the years has developed into a neighborhood with its own cafés, self-made houses in all kinds of shapes, bakeries, kindergartens, different kinds of shops, yoga-center, theatre – and a free trade of cannabis. The municipality of Copenhagen looks at Christiania as a large commune, and it is regulated by the so-called Christiania Law of 1989. But – since its beginning, the discussion on the legal status of the community has been ongoing.

In the founding years the young people of Christiania had a dream; they wanted to create a free city with space for everybody. A place 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 local involvement, from the urge for a more progressive and liberated life-style and affordable housing. Today, approximately 850 people live in Christiania.

**The role of fiction in “Christiania”**
The founding of Christiania is premised on the following what-if scenario: “What if we can create a free town where everybody can choose how much they want to work, build their own house and live as they wish?” In that sense, Christiania should be understood more like a social experiment than an architectural experiment. It is critical towards the surrounding society as it rejects free market capitalism as the governing model of property. Instead, the inhabitants of Christiania adhere to communal property and the maintenance of the district is based on social involvement and shared responsibility. Even though Christiania was not designed or planned as such, it makes sense to talk about a design aim that permeates the whole commune, that of Do-It-Yourself culture. The radical re-thinking of housing typologies (see Figure 3) and the famous Christiania-bikes thus clearly represent the practices of Do-It-Yourself culture in Christiania.

**CASE 4: AVL-VILLE (THE ANARCHISTIC EXPERIMENT)**
In 2001, the artist Joep van Lieshout (operating under the name Atelier Van Lieshout) realized AVL-Ville – a microstate in the port of Rotterdam with its own constitution, currency and flag. The village contained several workshops, production areas, as well as houses 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 and Medicine or the workshop for Weapons and Bombs. The last one

![Figure 4: AVL-Ville, Rotterdam](image-url)
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 defense as well as attacks.

**AVL-Ville** was an inhabitable anarchistic experiment, not just an art project to look at, but also to take part in and live in. As an experiment, it provoked the Dutch politicians and spurred a public debate and reconsideration of the laws that the politicians had made; laws about manufacturing and production of weapons, alcohol, drugs, energy and money. The Dutch Government closed down **AVL-Ville** after just one year, but Joep van Lieshout transferred his interests in investigating new possibilities of urban living into other projects.

The role of fiction in **AVL-Ville**

**AVL-Ville** is challenging (through art experimentation) the idea that it is the nation state that controls the laws that we live by and which we organize our daily lives according to. In that way **AVL-Ville** is an anarchistic art experiment that can be described more accurately according to the following rule of fiction: “What if we can create a microstate (within the state) with its own constitution, currency and flag?”

From this overall what-if scenario follows a whole range of sub what-if scenarios: What if we can build houses and workshops that enable us to become independent from the energy-grid and sewer system? Build weapons to protect ourselves and medicine to cure our diseases?

**AVL-Ville** is not a social experiment like Christiania. It is a participatory art experiment based on a whole series of art experiments (pointing into art activism, anarchism, critical art). **AVL-Ville** represents several design aims. One design aim is to provoke reactions from those in power; another design aim is to make us independent from the energy-grid; a third design aim is to experiment with technologies either to recycle old technologies or to prototype new technologies.

**CASE 5: EARTHSHIPS (THE RADICAL SUSTAINABLE EXPERIMENT)**

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 from recycled material; he creates houses that can operate off the formal electricity grid and that require little or no money to build. He has a social mission: noone on planet Earth should be without a home. He wants to empower people who have nothing to build their own house. Reynolds’s living concepts represent 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 waste and local materials, people can overcome poverty and create a home. He calls his architectural constructs Earthships. Earthships are a type of house made of natural and recycled materials and that have their own electricity and water systems installed (Figure 5).
Farm tools

Urban camouflage cloak

Fishing rod

Worm collector

Rat trap

Flower collector

Birds trap

Bird net

Pigeon

The pigeon makes its nest in the crevices of buildings. A species with a great capability for adaptation, pigeons have colonized all available urban spaces - from the atriums of buildings to metal constructions such as elevated railways and street lamps. The softest nests can be mounted on metal or wooden poles; the mildest can be housed in a wood or in a pipe. Once an icon of vintage poster art, pigeons are today one of the most appreciated specialties.

Figure 6: Protofarm 2050: The Guide to Free Farming
Though many of Reynolds’s living concepts have been built in the last 40 years, the State Architects Board of New Mexico took away Reynolds’s credentials in 1990 (claiming that 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.

**The role of fiction in Earthships**
The role of fiction in Reynolds’s *Earthship* experiments is to suspend disbelief about the potential of using garbage and waste not only to revolutionize architectural practice, but also to create a home for everybody on this planet. Reynolds wants to empower poor people so that they are able to build their own houses, and he does that by proposing radically sustainable living based on sustainability, recycling and resourceful environmentalism. He has several design aims; he wants to encourage do-it-yourself-mentality, take advantage of local resources and make people independent from the public energy-grid.

**CASE 6: PROTOFARM 2050 (EXPERIMENTING WITH ECO-STRUCTURE)**
The project *Protofarm 2050: The Guide to Free Farming* (2009) by 5.5 Designer, speculates on how people are able to survive in Paris in the year 2050.

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


**The role of fiction in *Protofarm 2050: The Guide to Free Farming***
Protofarm 2050 generates preemptive solutions to a predicted problem of the future: the problem of food shortage. It suggests the following fiction: 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-gatherer society?

The project is critical in the sense that it questions globalized food production, distribution and trade as a sustainable model. By suggesting that we have to return to an old socio-economical model of 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* has several design aims; it explores the projection of an old societal model into the making of a possible future, almost as if we were thrown into a particular time pocket; it suggests do-it-yourself practices as necessary for survival and at the same time it makes us aware of the scarcity of local resources in a modern metropolis.

**TYPOLOGY**
On the basis of these case analyses, we propose the following typology represented in Table 1 on page 8.11:

Table 1 offers a typology that allows us to characterize design fiction according to five criteria: (1) What-if scenarios as the basic constructional principle of design fiction; (2) the manifestation of critique; (3) design aims; (4) materializations and form; and (5) the aesthetic of design fictions. All six cases fulfill the 5 criteria by suggesting one or more examples from the Typology of Design Fiction.

For instance, *Protofarm 2050* (case 6) has as its basic rule of Fiction: “What if in the future our society will have to return to an old socio-economical structure in order to survive”? It is critical by visualizing the consequences of food shortage. The project wishes to exploit local resources and places us in a particular time pocket (that of a hunter-gatherer society). *Protofarm 2050* is materialized as a handbook of instructions using an aesthetics that can be referred to as “post-modernism”, since it uses irony and parody as its main design strategy.

While fiction in *Protofarm 2050* remains an imaginative speculation about the future, in the project Brasilia (case 1), fiction integrates with reality in a different way. Brasilia has as its basic rule: What if we turn a desert into a hyper-modern, functionalist 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
<table>
<thead>
<tr>
<th>1. Basic Rule of Fiction (What if-scenario?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- What if we turn a desert into a hyper-modern and functionalistic city, divided into work &amp; living zones?</td>
</tr>
<tr>
<td>- What if our cities (and our lives) were to be organized as if we live in a supermarket; What do we become?</td>
</tr>
<tr>
<td>- What if we create a freetown where everybody can feel free to work, build their own house and live as they wish?</td>
</tr>
<tr>
<td>- What if we can build houses that enables us to become independent from the energy-grid?</td>
</tr>
<tr>
<td>- What if we can build homes that makes use of local resources and re-cycling of materials?</td>
</tr>
<tr>
<td>- What if we in the future will have to return to older social-ecosystems or old technologies in order to survive?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. The manifestation of critique (How is it critical?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- By propagating Modernism as the universal answer to urban planning, ignoring existing local structures</td>
</tr>
<tr>
<td>- By giving an internal critique of the dominating architecture, art and design practice</td>
</tr>
<tr>
<td>- By demonstrating experimental forms of living based on social involvement and shared responsibility</td>
</tr>
<tr>
<td>- By challenging the idea that it is the state that sets the laws that we live by</td>
</tr>
<tr>
<td>- By proposing radically sustainable living based on recycling</td>
</tr>
<tr>
<td>- By visualizing the consequences of shortages of food, energy, pollution or other direct threats</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Design aims (What are the possible consequences?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- To demonstrate a new design or new architectural form</td>
</tr>
<tr>
<td>- To provoke reactions from those in power through art, design or architecture</td>
</tr>
<tr>
<td>- To encourage do-it-yourself mentality</td>
</tr>
<tr>
<td>- To make us independent from the energy-grid</td>
</tr>
<tr>
<td>- To make us independent from money &amp; consumer-grid</td>
</tr>
<tr>
<td>- To take advances of local resources</td>
</tr>
<tr>
<td>- To recycle old technologies &amp; prototype new technologies</td>
</tr>
<tr>
<td>- To throw us into a particular time pocket</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Materialization &amp; form (How is it visualized?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- As a model or prototype</td>
</tr>
<tr>
<td>- As an advanced, inhabitable or usable prototype</td>
</tr>
<tr>
<td>- As an entire city to be lived in</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Aesthetic of design Fiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Modernism (functionalism, streamline)</td>
</tr>
<tr>
<td>- Post-modernism (irony, pop, kitch)</td>
</tr>
<tr>
<td>- Grassroot-movement (folk-culture, do-it-yourself)</td>
</tr>
<tr>
<td>- Disruptive aesthetic (activism, anarchism, critical design)</td>
</tr>
<tr>
<td>- Sustainability (re-cycling, resourceful environtalism)</td>
</tr>
</tbody>
</table>

Table 1: Typology of Design Fiction
rigid totalitarian design program, materialized as an entire city, using an aesthetics that can be referred to as high modernism.

By using our typology, the role of fiction becomes more specific and it becomes possible to distinguish and compare one design fiction project to another. It is interesting, for instance, to see that both AVL-Ville (case 4) and Earthships (case 5) share the same design aim in wanting us to be independent from the energy-grid, but use different aesthetic means (disruptive aesthetics versus sustainability). In the same line of thought, Earthships (case 5) share aesthetic means with the project Christiania (case 3), namely grassroots movements (folk-culture, do-it-yourself) as well as sustainability (re-cycling, resourceful environmentalism), but again, these two projects do not have identical design aims. Christiania wishes to encourage a do-it-yourself mentality but does not aim at becoming independent from the energy grid or consumer culture.

**DISCUSSION**

Our typology is not in any way meant to be exhaustive, as the elaboration of its five basic criteria depends on only six case analyses, which are even limited to projects and interventions oriented towards urban space. However, what it lacks 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) rather randomly detects some characteristics of approaches, which engage in design fiction. One such approach is critical design where design fiction is often used to encourage critical reflection on how technologies influence and constrain our everyday lives. The second method that they mention is the Dutch architecture bureau MVRDV’s method of posing “unanswerable questions”. A third method of practicing design fiction is the technique of projecting outworn societal models into the future. However, such a characterization does not provide any coherent or systematic understanding, but is rather fragmented. In the first instance design fiction is defined in terms of the intended effect of the designer, in the second, it is identified with a certain mode of asking, and in the third instance, design fiction is equaled to a certain mode of forecasting (the re-configuration of time) without accounting for the numerous other ways forecasting may take place. We agree with Grand & Wiedmer in that these characteristics are important, but they need to be included into an overall framework. Compared to Grand & Wiedmer’s method toolbox, our typology is meant to provide a formal account of some of the ways fiction may enter into design experiments.

Our typology also differs from the work of DiSalvo (2012) in that it takes design experiments as its primary point of departure. Insofar as DiSalvo defines design fiction in terms of spectacles and tropes as being two elementary forms, he draws upon theoretical concepts borrowed from other disciplines external to design research, namely art theory and poetics. The notion of spectacle is central to the theory of the avant-garde, where it refers, in particular, to the Situationist International movement. Guy Debord, Asger Jorn and other Situationists conceived of the capitalist society as a Society of the Spectacle that was alienating man and turning him into a passive consumer. As a counter-reaction, they introduced the idea that tactics of estrangement (détournement, urban drifting) could be used by the artist to contest this society and eventually emancipate the spectator so that he would become an actor taking part in social reforms. In accordance with this, DiSalvo sees design fiction as a form of estrangement that liberates users from inflicted ideologies and unchallenged values.

By conceiving of design fictions in terms of tropes, DiSalvo reduces design practice to a verbal practice. The concept of tropes comes originally from literary theory and poetics, where it denotes a whole family of verbal figures of speech (allegory, metaphor, metonymy, and so on), which can be used in a rhetorical and poetic manner to convey new meaning in language. Our typology is developed out of a close analysis of how design fiction is practiced through design experiments themselves, and so it avoids conceptualizing design practice as something else. More specifically, we use principles and criteria from design practice (scenario, aesthetics, materializations, critique, and design aims) as our main distinctive traits.

**CONCLUSION**

The typology in this paper is meant to lay the first stepping-stone towards building a more comprehensive framework for understanding design fiction as a new approach in design research. Our assumption is that by studying the role of fiction in utopian practices within design, art and architecture, we are able to increase knowledge of how fiction can be used in design research as well. This is not to say that the role of fiction in design practice is the same as in
design research. In fact, we believe that there are both numerous similarities and differences. Here, though, our primary interest was to uncover some of the similarities and particularities, while the study of the differences will be the subject for future work.

Our typology allows for a systematic analysis and nuanced characterization of design fiction projects according to criteria inherent in design experiments. However, to heighten the impact for design, we need to operationalize the concepts of the typology. Concurrent to this study, we have developed a 4-step method to help design researchers craft what-if scenarios and speculative futures (Markussen & Knutz, 2013). This method makes use of the fictional techniques of authors and we believe that – taken together with the typology – this will serve as a valuable method toolbox for design researchers sharing an interest in design fiction.

REFERENCES