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Exploration and Imagination of City Futures in Science-Fiction

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1 ABSTRACT

Whilst urban planning is regularly based on the scientific state of the art, Science-Fiction (Sci-Fi) creators are free to implement more improbable aspects which may look 'mad' from today's view. This paper focuses on the question what urban planning can learn from urban future created in Sci-Fi works.

The articleis based on empirical data from a research project named "Sci-Fi Cities – urban futures in art, literature and video". The study was conducted by an interdisciplinary team of researchers at Brandenburg University of Technology, Germany, including experts from media science, urban planning, architecture and visual arts.

The aim of the study is to analyze how future cities work in Sci-Fi and if respective what urban policy formulation can learn out of it. The timeframe set starts from the 1970ies and focuses on Sci-Fi works dealing with a future being still prospective from today's view. The geografical emphasis is put on the Western culture (Europe, US, Japan) since the study aims in providing deductions for the German context. Sci-Fi works from different media as movies, literature, comics, computer games are taken into account.The project was assigned by the Federal Institute for Research on Building, Urban Affairs and Spatial Development in Germany (October 2014 until March 2015).[1]

2 URBAN PLANNING AND FORESIGHT

Cities are focal points in society's progression and development. At the same time, they are hotspots of risks and threats as natural disasters, military or cyber attacks (Rötzer 2006). Imagining the future of cities and regions therefore requires not only to make plans and to implement them but also to find strategies to avoid risks.

Urban planning is always made for the future. As the way we plan our cities at least partially determines the future, it is important to know for which future we are going to plan (cf. Acatech 2012: 13).As there is not the future but a range of possible future worlds, the use of different means like foresights, prognoses and scenarios has been integrated into spatial planning strategies for decades (Neumann 2010). Common scenarios for a city or region relate i.e. to the population figure.

The scientific state of the art and the methods approved determine the foresight of future development undertaken by scientists. Altough this prevents fortunetelling it may restrict the scientists'view on the future. In comparison, Sci-Fi creators have more liberty to think about likely or unlikely developments (Steinmüller 2010).

The study conducted by the authors builds on this approach:The aim of the study isto bring Sci-Fi future imagination into the urban planning discurse to enlargen the pool of ideas forfuture cities. Despite their different background, Sci-Fi cities' creators can provide foresights on cities' development in the sense of an early warning mechanism. Therefore, a detailed question of the study is: Which areas of planning action need special attention to prevent developments and to facilitate positive Sci-Fi visions?

3 AN APPROACH TO THE SCIENCE-FICTION GENRE

Sci-Fi is, among grotesque, fairy tales and gothic novels,a part of speculative fiction. The term Sci-Fi goes back to the 1920ies when Hugo Gernsberg edited the pulp magazine Amazing Stories (Midal, Clemens, 2008: 11ff, 91ff). Nowadays, Sci-Fi is a part of popular culture: Sci-Fi imaginations are represented in films, literature, comics and games, partly in visual arts as well. They are referenced in fan discurses, in particular in the internet (fan art, cf. Zaremba 2010).

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[1] The study was conducted by aninterdisciplinary team consisting of Steffen Krämer (media scientist), Moritz Maikämper and Carolin Pätsch (urban planners), Bodo Rott (artist) and Belinda Rukschcio (architect) from Brandenburg University of Technology Cottbus–Senftenberg.

One important aim of Sci-Fi creators is to entertain. However, Sci-Fi works regularly criticize the existing world (Midal 2014). Steinmüller formulated the general aim of Sci-Fi by the imagination of "what if" based on a novelty (2010). Sci-Fi works act like a mirror of current trends and developments:They pick current themes, reformulate them and bring them back intothe discurse. This gives Sci-Fi the potential to design future, even for a popular audience (Steinmüller 2010). Nevertheless: Sci-Fi is not strictly linked to the future. Itrather means a side step from its contemporary origin (Midal 2014).

There is not a single definition of Sci-Fi (cf. for some: The Encyclopedia of Science Fiction: 1979). Regarding the experimental and explorative focus of the study, a broad definition of the genre Sci-Fi has been choosen, taking into account the view of Sci-Fi editors, authors, magazines, fans and secondary literature.

Although Sci-Fi is rooted in the imagination of technological future, city imagination plays an important role in Sci-Fi (Redmond 2004). In the 1970s, Sci-Fi city imagination was i.e. tightly linked to real development. Itdirectly commented on urban problems of US cities (Wolfschlag 2007): By that time, over-population and following problems were an important issue (Sobchack 2004). In some cases, real cities are the model for Sci-Fi cities. Despite the fact that distopian futures are dominating, there are examples giving positive Sci-Fi (city) visions, i.e. within specific political settings as in the German Democratic Republic (GDR).

One typical aspect of Sci-Fi is a division of semantic spaces. These spaces are defined by specific characteristics and stay in opposition to other semantic spaces. They can be congruent to topografical spaces or apart from them (Krah 2004). A classic Sci-Fi division i.e. is terrestrial vs. extraterrestrial. A city and its surrounding rural area can provide a similar division. Sci-Fi imagination of human societies ranges from space realities leaving the surrounding of the earth to existing urban scenes.

There is a long tradition of utopian city representations referring to other spaces without being linked to specific timely aspects (Koselleck 2000). The capture of the concept of utopia by Sci-Fi added the dimension of time to future urban portrayals. This refers to the aim of utopia in Sci-Fi: the goal of an ideal society, achieved by technical and moral progress (Kuon 2013). However, most of Sci-Fi works refer to a distopian future. In contrast to utopia, dystopia is a place of misfortune (Kuon 2013). This acts as a warning exaggeration regarding the way of living together (Kruschel 1995).

4 URBAN SCI-FI FUTURES

In the empirical approach Sci-Fi works showing urban areas and aspects were collected. 53 of them, providing a broad range regarding different media and the time and place of creation, were selected for a detailed analysis. The analysis was done with a grid of categories from media science and urban features, pertaining to:

- Settings andparadigmatic places
- Normative oppositions, represented by semantic worlds and themes
- Urban aspects as governance, technical and social infrastructure, typologies.

The analysis revealeda quantitative range of data in order to answer the question if Sci-Fi city imaginations offer a sufficant complex urban picture. The amount of layers refered in the selected works show varieties from less than 10 to 19 out of 20 layers of the analytical grid. It became obvious that the amount of refered layers in literature and film is the highest. Nevertheless comic and games show a wide range of layers whereas visual arts employ relatively few layers which might partly due to the type of visualization. The quantitative analysis indicates that Sci-Fi imagination can be relevant for urban planning: Sci-Fi works show a kind of complexity of urban issues rather than fragmented urban scenes.

Beside the quantitative analysis, some Sci-Fi works were analyzed qualitatively to get comprehensive urban portrayals. Explicit visions of future cities are given in terms of urban transportation as well as the role of media and communication systems. Governance scenarios are less explicit but of same importance for comprehensive urban portrayals.

The analysis points out that governance aspects show a political systemin 90% of the analyzed media. In these systems, the stakeholders, their interest and the ways of rule extend beyond the existing ones. Main stakeholders are often firms, the state or the military, ruling within a totalitarian system. Techniques of territorial, biopolitical and psychological control exist in several works. The territorial control in Elysium

(2013) i.e. shows border control, resident permits and obligation of identification by a central administration. The territorial control implicts the possibility of central steering.

Regarding the architecture in future cities, the following results came forth: Construction materials shown are similar to the current ones whereas dimensions of buildings and cities differ from existing urban structures of the 20th century. By urban structures of inside and outside (building – open space or city – rural area) oppositions are shown. Nevertheless, open spaces are rarely part of Sci-Fi imaginations: If they are part of the urban scenery, they play a central role for the story and are used excessively or in unfamiliar ways, i.e. as settlement for the homeless (*Die kommenden Tage*, 2010), or as location for a multi-storey parking garage (*Traffic Problem*, 1976). In *Logans Run* (1976) nature is used as central element and opposite semantic space to the city.

Information about transportation structures exist in 47/53 works. This may be due to the fact that transit is a major part of the plot and carrier of the Sci-Fi story. The films *Cloud Atlas* (2012), *The 5th Element* (1997) and *Blade Runner* (1982) show a wide variety of transportation structures, mostly as modification of forms already known. Sci-Fi traffic scenarios show modifications of access and control to public transport and the way of use.

Although technical infrastructure is often part of Sci-Fi scenarios, it becomes explicit in less than half of the analyzed works. Two examples of Sci-Fi infrastruture scenarios are *materials cycles* and *environmental degradation*. In the visual art work *City of Slaves* (2005-2008) a materials cycle without emissions and disposal is shown. *Soylent Green* (1973) focusses on scarce ressources and degradation of the environment. *Soylent Green* represents a scenario based on the ecology discourse from the 1970s whereas the first shows the cycle from the 2000s' perspective. What applies for technical infrastructure also applies for social infrastructure: it is made explicit if it is part of the theme or scenario of the Sci-Fi work.

Nearly half of the Sci-Fi works analyzed use existing cities, headed by New York, as spatial reference. These works are from the media film, literature and comic. Existing references play a minor role in Sci-Fi games and visual arts.

5   LEARNING POTENTIALS FROM SCIENCE FICTION

Although there is a series of urban forms in Sci-Fi imagination which emerge in different times, the Sci-Fi story development is parallel to urban planning paradigms and the discurses have hardly any intersections, apart from the mentioned inspiration in the US of the 1970s. Sci-Fi references are based in other Sci-Fi stories or in current references of the author, which either could be current public discurses or personal interests of the respective creator. Despite the independance between urban and media science disciplines there are common features among themwhich have to be revealed in order to find interconnections between the both.

Notwithstanding classified Sci-Fi city forms, i.e. dome city, island city of edge city, used in Sci-Fi are not directly transferable to existing urban forms, they seem to be compatible for urban theory. The models of one field are used heuristically in the other field. In *Planet of Slums* (2006), Mike Davis i.e. uses the terminology "off-worlds" from the movie *Blade Runner* (1982) to explain anurban development. Vice versa, William Gibson uses the urban term "sprawl" to explain the metropolitan network between Boston and Atlanta. The use of film references in urban theory, i.e. in Planet of Slums, serves as container for several characteristics at the same time: The film *Blade Runner* addresses geografical segregation as well as the power of a global company. Davis thereby manages to use multidimensional references not having any direct urban theory equivalent. Apart from this hermeneutic use of terminology, professional urban planning or architecture literature is rarely referenced. However, professional references are more likely if the Sci-Fi creator himself is familiar with the other discipline.

AsSci-Fi works offer a complex city imagination (see ch. 4: Urban Sci-Fi Futures) and methodological assets (see next paragraph), they are worth to be taken into account for urban planning issues.However secondary literature dealing with sci-fi in different media is rare. Good examples taking cities into account are Robert Sheckley's *Futuropolis. Impossible Cities of Science Fiction and Fantasy* (1978), dealing with examples of architecture, arts, comics, graphic illustration and literature, and the *Visual Encyclopedia of Science Fiction* (1977), dealing with comics, magazines, books, movies and other media, ordered by themes including cities.

Whilst urban planning regularly is based on the scientific state of the art, Sci-Fi creators are free to implement more improbable aspects which may look 'mad' from today's view. Although Sci-Fi creators methodically build their story on esthetic considerations (Steinmüller 2010), they create internal coherance and 'realistic' images for the sake of entertaining and creating a good story.

Sci-Fi scenarios show a direction which can be tested on plausibility and effects on their respective context. Their content complements on themes – the traditional object in media science – which represent the subject. The analysis revealsthemes like *limitations of governmental power*, *medical provisions* or *technical influences on the livelyhood*(see fig. 1). Based on the underlying situation, the respective scenario shows a utopian or dystopian manifestation. Extracted frequent scenarios are: *ultra-judiciary*[2]*, uneven medical treatment and intelligent machines*.

Scenariosare one typeof future foresight in the sense of "it could be like that". The term scenario is not limited to the media science perspective on Sci-Fi. Scenarios are also a very common instrument in urban planning methods (see ch. 2).Scenarios are not used for predictions of the future. They are employed when fixed prognoses are not possible. "[…] scenarios are hypothetical sequences of events constructed for the purpose of focussing attention on causual processes and decision points" (Kahn, Wiener 1967, p. 6). Kahn and Wiener herby stress the selective character of scenarios centering one aspect and constructing possible developments.This is the common ground of Sci-Fi scenarios and urban planning scenarios. Due to the fact that Sci-Fi scenarios are not neutral and objective (Steinmüller 2010) they are more qualified for foresight than Sci-Fi themes.

According to Steinmüller (2010), the effects shown in Sci-Fi sceanrios are relevant for foresight because there are several matches of Sci-Fi scenarios and real developments. Nevertheless he denies Sci-Fi the capability for foresight of implementation of inventions. For technical novelties the match often reveals Sci-Fi images far from reality (ibid.2010). This stresses the potential of Sci-Fi to be used as an early warning system for urban development.

In both fields scenarios construct possible developments in the sense of a foresight. Nevertheless their purpose is different: Scenarios in strategical urban planning are a tool to deal with incertanties (Neumann 2011, 171) and fathom different development directions, whereas scenarios in Sci-Fi aim in entertaining and warning. The latter is one of the reasons why Sci-Fi scenarioscould be employed to fathom development directions in urban development. In addition, scenarios are a possible interconnection of Sci-Fi and urban planning, because they are used in both fields to illustrate possible directions of development. They equally refer to their respective context which makes them testable. Sci-Fi scenarios can be used as methods in urban planning because they communicate by pictures. Furthermore, Sci-Fi is a type of popular art and factor future creation (Steinmüller 2010). Due to the belonging of Sci-Fi to popular culture, Sci-Fi scenarios represent a type of foresight which can mobilize people and be a mind opener. Sci-Fi employed as impact assessment could be helpful for scientific foresight as well.

The interconnection of Sci-Fi and urban planning reaches beyond the methodological sphere. The study questioned whether Sci-Fi works give links to new fields of action in urban policy formulation. The underlying empirical analysis of the works indicates that Sci-Fi scenarios are relevant for urban development. Areas where urban planning can learn from Sci-Fi wereidentified by comparing them with current urban challenges in Germany and wider societal themes.

Due to their content, challenges of urban development in Germany in 2013 seem to be compatible with the themes identified in the analysis of the Sci-Fi works (see fig. 1). It is obvious that several challenges resemble common Sci-Fi themes. Some Sci-Fi themes could be connected to different urban challenges. This is the case for capitalism in Sci-Fi, which reflects the general subject of poverty of the municipalities due to financial crisis, polarization of income and unemployment as well as privatization of public services and economization of the public administration. The compliance might base on the broad character of the Sci-Fi themes but it is more likely that the interconnection exists because of the inspiration of Sci-Fi authors by current discurses. Due to the fact that in the 1970s Sci-Fi was close to urban development, some fields could have been derived from this area and be referenced in later creations.

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[2]An extreme or autonomous judiciary not being subject to political control.

Science-Fiction themes and broad urban challenges →	capitalism	labour	limitations of governmental power	psychological control	privacy	medical provisions	ecological awareness	demography	technical influences on the livelyhood	limits of humanism
natural ressources		■					■		■	
technology			■	■		■		■	■	■
economy	■	■				■				
(urban) society/governance		■	■	■	■	■	■	■		■
urban structure		■	■			■	■	■	■	

Fig. 1: Grid challenges and Sci-Fi scenarios (summarised presentation)

The Sci-Fi themes *capitalism,psychological control[3], privacy[4] and limits of humanism[5]*arethe ones least equivalent tocurrent urban challenges. This gap may base on the fact that most of these subjects do not represent classical urban planning subjects. Nevertheless these themes might gain importance for urban planning in the the future, i.e. by genetical research.

The match of wider societal themes currently discussed are i.e. the surveillance and control of public space in cities due to crime and terror threats. More and more, public transport spaces as well as public spaces in cities are under video surveillance. This restricts the freedom of use in these areas. Further it includes the risk of missuse of data by state secret services, a scenario which is omnipresent since the wikileaks affair. Currently this is more an issue for domestic politics and law, however, it has to be consideredfor urban planning and design. Adaptations in urban design and transport design are necessary in order to include augmented security requirements into the city space. Urban policies dealing with these issues are necessary. The examples show the proximity of current development trends to urban Sci-Fi scenarios. The film *Brazil* (1985)i.e. shows the consequences of missuse of personal data.

As a result of the study, fields of future urban policy action can be formulated. It is evident that even though the manifestations in urban sphere are not quite sure at the moment, policy makers have to be aware of themes named in Sci Fi. In addition research can promote knowledge generation;government subsidies can direct the development. The current discourserelated to *smart cities* shows that themes formerly not evident for urban issues become more and more important.

6   CONCLUSION

Urban policy formulation can learn from Sci-Fi: As the study illustrates, Sci-Fi works show a broad range of specific urban aspects, i.e. how public space can look like or how traffic might be organised in the future. Further, Sci-Fi scenarios can be an indicator for social and cultral trends. Urban planning using scenarios therefore can widen up its focus to integrate more improbable aspects by refering to Sci-Fi works. In the perception that Sci-Fi does not want to project the future but rather shows a side step of the existing world (Midal 2014), urban fields of action can be identified from Sci-Fi imaginations. Sci-Fi can help to train future thinking, open the mind to overcome barrieres of thoughts and open up popular future expectations

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[3]The control of the citizens by drogues, hypnosis or control of dreams.
[4]Changesin present public-private divisions.
[5] Ethical questions dealing with hybrid beings or the transition between humans and maschines.

(Steinmüller 2010). In this sense Sci-Fi can show in which areas risks and challenges for vibrant city futures are situated.

Nevertheless it seems necessary to pursue the connectionbetween media science and urban planning. As futorology uses methods of both, media sciences and urban planning, in terms of hermeneutic and modelling instruments,this might be a helpful interface.

The empirical research was based on the genre Sci-Fi. Related genres like fantasy may offer similar insights from differentdiscurses. The method of the study could be extended and integrate fantasy and other forms of speculative fiction for further inquiries.

Planning for vibrant cities and regions means to think in options because the future is uncertain. The use of scenerios in urban planning canhelp in this regard. Sci-Fi works offer potential fields for urban policy formulation however traditional urban policy fields are equally important.The results of the study should encourage planners to think outside the box to get a complex vision of future cities. Sci-Fi scenarios can be a valuable source in this regard.

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