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THE IMPORTANCE OF PRAXEOLOGY FOR EVIDENCE-BASED DESIGN IN HEALTHCARE ARCHITECTURE

INTRODUCTION

Compared to other disciplines, there are more methodological choices to make in architectural research, due to a relatively broad focus.[1] Besides, different fields of architecture are often related to specific research-based practices. Awareness of the possibilities in research methods as well as awareness of the fact that every design assignment is different, and therefore longs for a different research approach, is very often not present. Research and design are interwoven and therefore it is important to carefully consider the methodological approach.[2]

The lack of this awareness is partly due to the fact that in many universities they still emphasize aesthetic styles and questions of form-making.[3] Therefore, research methods related to the aesthetic styles are most known and applied in the architecture schools and profession. In my opinion the emphasis of architecture and research should instead be more on the user and environmental psychology that goes along with it. I feel the spatial practice and social functioning of architecture are often forgotten. This is why the lecture of Marieke Berkers about Social and Spatial practices inspired me. The lecture contained a lot of knowledge about praxeology. It is an interesting method for collecting qualitative evidence of human action and conduct in the built environment. It showed me how different instruments can be used for qualitative research, and how different research approaches influence the view on socio-spatial problems. Berkers said “by studying the praxis of architecture one can develop an eye for the actual users of the building, and not the imagined ones.”[4] The importance of qualitative research, and especially of involving the actual users in the research and design process is explained by Hill, who argues in ‘the use of the architect’, that there is no clear linear route from the architect to the user. “Buildings are made by both of them.”[5]

The starting point for the Health@BK lab is to indicate different types of users and to integrate the users in the research. This is related to a growing awareness among healthcare professionals for the need to shift from a disease centered approach to a patient centered approach in health care and cure.[6] Besides, there is a strong relation between the health-care field and evidence-based design.[7] My graduation studio chair of Health@BK lab also approves the evidence-based design approach. It is related to another important development in health care, namely that it changed in a few decades from an expert driven into an evidence based driven scientific field.[8] Therefore, the research question is as follows: how can praxeology as socio-spatial research, contribute to evidence-based design in healthcare architecture?

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[1] Groat & Wang, 2013, 4.
[2] Groat & Wang,2013, 101.
[3] Gieseking, 2014, 26.
[4] Berkers, 2018, lecture.
[5] Hill, 2001, 354.
[6] TU Delft Department of Architecture – Health@BK lab, 2018, 8-9.
[7] Groat & Wang, 2013, 5.
[8] TU Delft Department of Architecture – Health@BK lab, 2018, 8-9.

RESEARCH-METHODOLOGICAL DISCUSSION

The research I'm doing in the Health@BK lab for my graduation, is based on improving the patient journeys and waiting experiences for patients with cancer. The aim is to design a stress reducing, or so called 'healing environment' for them and all other users involved. Architecture in general, but especially healthcare architecture, is a multidisciplinary field, due to a lot of different users, stakeholders and flows. It longs in my opinion for a strategy that will collect evidence which highlights the different perspectives, which is why I will use a combined strategy to apply evidence-based design.

To identify the actual users, and later to improve daily journeys of patients, and other users in hospitals I will use praxeology. The emphasis of this research will be on the waiting rooms, to gather evidence for human action in these spaces. This will be done mainly by observations and time-motion mapping to be able to identify good and bad practices on a social and spatial level.

To gather more detailed information, so a more holistic image of the actual users can be created, the research will be complemented with interviews.

Furthermore, to fulfil my research I will use existing literature on evidence-based design and hospital design, as well as literature on oncology and oncology patients. Historical research will be done to see how hospital design developed over the years. Typological research will be done for recent projects to gain a reference frame for contemporary trends.

In simple words evidence-based design can be defined by "the thoughtful use of the best available knowledge to improve design decisions". In architecture it has always been common to use evidence for decision making, but rather evidence from architecture related studies, like material science, engineering or physics. Evidence-based design is seeking evidence from completely other scientific fields, like sociology, environmental psychology and the health discipline.[9]

A current problem for evidence-based design is the lack of interest in empirical knowledge gained by qualitative studies for evidence-based design. Qualitative research is in particular very useful for understanding the processes of people's activities and the meanings of them. This is due to the main strengths of qualitative research, which arise from the capacity to capture holistic aspects of actual circumstances and settings.[10] As architecture should work spatially and socially, using qualitative research to provide evidence-based design seems necessary, and the lack of interest for the use of it contradicts the growth of qualitative research in other fields in architecture as an important strategy of inquiry.[11]

Another limitation of evidence-based design is the use of a narrow focus. This focus is mainly on healthcare, excluding design knowledge which is generated in other scientific fields, even though evidence-based working is recently slowly more applied in other architectural fields.[12]

The narrow focus on healthcare caused an increasing body of knowledge on evidence-based healthcare design in recent years though, and the amount of available information is still growing rapidly. This is partly due to the major persuasion that we should design patient-centered environments, as mentioned in the introduction.[13] Evidence-based design is very useful to reach this aim and therefore holds great promise for benefiting key stakeholders. Patients and families in the first place, to help them cope with the stress that accompanies illness, but it also holds great promise for physicians, and nurses, as well as other healthcare staff and organizations.[14]

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[9] Hamilton & Watkins, 2009.

[10] Groat & Wang, 2013, 257.

[11] Groat & Wang, 2013, 258.

[12] Huisman, Morales, van Hoof & Kort. 2012, 58, 70-80.

[13] Ulrich, 1991, 201-230.

[14] Roger, Ulrich, 2010, 1.

RESEARCH-METHODOLOGICAL REFLECTION

Modern qualitative research dates back to the early decades of the 20th century, when anthropologists and sociologists used qualitative research methods to study human phenomena from a holistic viewpoint. By the 1930s, qualitative researchers emphasized on naturalistic settings, while other disciplines, including nursing, political science, education and management adopted qualitative methods to answer their research questions.[15]

A good example is Taylorism, a movement believing in evidence-based management, whereas production and management decisions should be made based on empirical observation and measurement. It had its peak of influence in the 1910s.[16]

Followers like Frank Bunker Gilbreth (1869-1924) and his wife tried to improve work habits by measuring time and motion very precisely, using photography and a 'microchronometer'. Later on, praxeology was also used in architecture and interior design. Economist Christine Frederick (1883-1970) did motion studies, showing the movement of the housewife in their kitchen with the aim to improve household efficiency. Architect Margarete Schütte-Lihotzky (1897-2000) followed Frederick's ideas with her design of the Frankfurt Kitchen for Bauhaus. Cora Nicolai-Chaillet (1919-1975) used activity diagrams as well to design flexible interiors for housing at Kanaleneiland.

A more recent example is architect Jan Gehl (1936) who advocates a sensible, straightforward approach to improve urban form: systematically documenting urban spaces, by counting, measuring, observing and analyzing the spaces, gradually improving spaces, to document them afterwards again.

In the 21st century, qualitative researchers are developing new techniques for taking advantage of the increasing availability of pictures, videos, and tests on the internet.[17]

But an even more modern use of praxeology can be found in optical 3D motion capture systems which allow complex movements in space in real time to be tracked at high precision. It is an important bridge between physical and virtual environments. They can be set up to record the movement patterns of people in buildings which creates opportunities for architecture studies.[18]

Another development for socio-spatial research is that of cognitive technologies, which the company DesignSpace is focusing on. The team provides customized technological solutions for large-scale build environments, often seen in the healthcare sector.[19] "It interfaces the state of the art from the fields of architecture design, cognitive science, with a focus on computational cognitive systems, spatial cognition, artificial intelligence driven analytical design computing, and evidence-based analytical methods in the environmental and social psychology".[20]

As qualitative research developed in the beginning of the twentieth century, the movement towards evidence-based design started in the late twentieth century. It can be traced back to Roger Ulrich who did a pioneering research in 1984.[21] Since then, more academic attention was paid to the relation between architecture of the hospital and the wellbeing of the patient. The state of knowledge of evidence-based healthcare design has grown rapidly and is still growing. It resulted in the so-called 'healing environments'.[22]

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[15] Schutt, 2015, 357.
[16] Kelly, 2016, 1.
[17] Schutt, 2015, 357.
[18] Hirschberg, Sayegh & Zedlacher, 2014, 116.
[19] Designspace.org, home.
[20] Bhatt & Schultz, 2017, 230.
[21] Ulrich, 1984, 224.
[22] Huisman, Morales, van Hoof & Kort, 2012, 58, 70 – 80.

The relatively late development of evidence-based design is peculiar as the positive effects of space and the environment on people were well known in the era before science.[23] Without knowing Florence Nightingale was already using evidence-based design, a century before Ulrich. From her research she determined the best hospital design and environment for the best patient outcomes.

The realization of major changes in healthcare architecture and healthcare workflows are slow and complex processes. I do think evidence, and therefore evidence-based design, can be a great solution to accelerate the process of change. Optical 3D motion capture systems as well as cognitive technologies can be good instruments to provide in evidence and the interpretation of it. As for my project, these instruments are not in my reach and way too complex. Instead I will rely on old and more simple methods of observing and interviewing. In this way the architect might be more connected to the actual users of the (future) building too. With simple observation I will try to make activity and time-motion diagrams.
I do think this more traditional way of socio-spatial analysis will help me to improve patient journeys and waiting experience of the patients.

POSITIONING

As stated in the introduction I argue that the emphasis of research and architecture should be on the actual user. Like Austria's first female architect Margarete Schütte-Lihotzky said "The form of a dwelling is never achieved through the idea of a single individual".[24]
That Schütte-Lihotzky saw the importance of the user, is stated by Esra Akcan as well "…, it suggests that Schütte-Lihotzky may be one of the few modern architects who recognized and acknowledged the importance of users as the agents of the built environment."[25]

Furthermore, evidence-based design already proved that the architectural environment has a huge influence on the wellbeing of people. Not only in healthcare facilities, but also for educational buildings, offices, hotels and restaurants it has an important effect. As qualitative research methods like praxeology make the actual users and their needs visible, it is ideal for providing evidence.

A complex issue though, when using qualitative research methods like praxeology, is objectivity. Can qualitative research be objective and therefore suitable for providing in evidence-based design? As already mentioned above I do believe in the use of qualitative research for evidence-based design and I will substantiate why.

Marieke Berkers states clearly in her lecture that it is very hard to be a 'neutral' observer, without giving your own interpretation to what you observe. In the talk on socio-spatial practices the discourse is about interpretation of social and spatial practices as well. Everyone perceives spaces differently, as well as social practices. The observer perceives movement and action in his/her way and already interprets it – maybe without noticing - when mapping the movements. Even though praxeology cannot go without personal interpretation, as argued in the talk, I do think it is possible to create a more objective and professional interpretation while observing. Marieke Berkers argues that the task of a critical observer involves a critical recognition of the historicity of perception due to the organization of human sense perception, which is not only accomplished and determined by nature, but also by historical circumstances. This is a possible way to make interpretations of human action and conduct more objective.

Even though praxeology is not always completely objective, I still think qualitative research methods are important and benefit the value of evidence-based design. I like to refute the assumption that evidence-based working should eminently be based on quantitative research as design knowledge of

[23] Schweitzer, Gilpin & Frampton, 2004, 71-83.
[24] Schütte-Lihotzky, 2004, 145.
[25] Akcan, 2009, 186.

the semantic kind can be more easily accessed and understood through qualitative studies. Additionally, the narrow focus of evidence-based design can be improved by the use of qualitative research as well. Qualitative research is often a more suitable way to research new unstudied subjects than quantitative methods.[26] As evidence-based design is a relatively new approach, qualitative research can widen the scope and therefore improve the knowledge on new subjects and attitudes, also outside the healthcare design field.

To deal with the objectivity problems of socio-spatial research to provide in evidence for the evidence-based design approach I would like to come back to the combined strategy. Many researchers believe that the different research methods can fulfill each other when combined, for optimal effectiveness. Weaknesses in the methods can be checked suitably by one and another, thus reducing the problem of subjectivity for qualitative evidence. In particular combining quantitative and qualitative research methods will cause proper and complete knowledge about evidence-based design. [27] [28]

With these statements made, I answered my research question ‘how can praxeology as socio-spatial research, contribute to evidence-based design in healthcare architecture?’. Architects should remember their responsibility towards the people and the society, to be able to design a built environment that influences the wellbeing of people for the good.

[26] Schutt, 2015, 357.
[27] Groat & Wang, 2013, 72.
[28] Groat & Wang, 2013, 441.

SOURCE LIST

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