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The Design Researcher in Quandary

-The conflicting roles of being both a designer and a design researcher

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ABSTRACT

In the field of practice-based research we articulate the dilemma that emerges as the *creative* designer embraces the role of being an interaction design researcher. We exemplify the dilemma in a specific design case originating from a PhD project. In this case, we use sketching to illustrate how the design researcher embodies the creative designer at all times. We show how the dilemma becomes tangible in the conversation with the material when having to manage a set of design constraints, concerns and sensibilities. We acknowledge that when taking on both roles at the same time there are two different clients with different agendas to serve. Where one is concerned with making the best possible product the other pertains to the contribution of knowledge. Finally, we state the importance of having a strong research question when balancing a research program while at the same time creating a new, desired reality.

Keywords

Research method, practice-based research, sketching.

INTRODUCTION

As first-year students at the Aarhus School of Architecture we went on a study trip to Helsinki. In the heart of the city our advisor asked us to take a close look at the surrounding buildings because, as he put it, “you will never be able to look at buildings the same way again”. His point was that being an architect or designer influences your individuality and contributes to the way you view the world. The creative thinking lies inherent in the designer’s mind and actions; and is, as such, not seen as a free choice at the designer’s discretion. A decade after being in Helsinki, we have grown into the field of interaction design, where we encounter the dilemma of being *creative* designers

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undertaking practice-based research. The dilemma occurs, as the design researcher and the designer use the same methods in the making but produce dissimilar design artefacts.

Interaction design is an interdisciplinary field and to distinguish between diversity of design approaches we subscribe to Löwgren’s [12] definition of the *creative* designer as being an interaction designer that is classically trained or have extensive experience practicing within creative fields [12]. Working as a creative designer and design researcher is in practice-based research closely related as they advocate the same way of working, e.g. sketching, to acquire knowledge. The designer and the design researcher both need to be “conscious not-knowing” [14] to certain design concerns in order to handle the complexity of the design problems. Furthermore, they both answer to a client; but where the designer serves commercial aspects, the design researcher serves the research question. The scope of this paper is to articulate and discuss the dilemma of being a creative designer doing practice-based research.

We draw upon Daniel Fallman’s notion of three extremes of interaction design research as design exploration, design practice and design studies [6] to describe the range of the field. He states that the researcher continually changes roles and perspectives throughout the design process e.g. between being a researcher and a designer [6]. However, it is our claim that the roles instead of changing, inherently lie within the interaction design researcher. When taking on this notion, the dilemma of having to manage both research questions and design qualities comes into play. Whereas, if the roles, as Fallman describes, are put on before starting an activity, the dilemma never surfaces because the choice of which to answer to is made in advance. Often the design program and the research program go hand in hand but what happens when they do not?

PRACTICE-BASED RESEARCH

The use of design, and consequently how it is approached, has during the past 20-30 years shifted within the field of

HCI. Roughly speaking, three generations represent three different ways of approaching the design process. The first generation approaches design as “engineering design”, where the designers seek to solve a particular problem. The second generation focuses on user participation and the designer advocating the user’s needs. The third generation recognizes the role of the designer in creative design practice, thinking and reflecting in iterative design processes [3][12][18]. The qualities of the creative process are of great value as a design perspective and invite the HCI community to take a holistic approach to addressing under-constrained design problems [13] [18] [19].

In research-through-design [9], designers use their practical design skills to inform a research program. Brandt and Binder [1] distinguish between ordinary design work and design work carried out within a research project by differentiating between how programs are used. Programs are within both areas used to articulate the scope of exploration. But while the objective of a design program is to explore what can be accomplished in term of finished design, the design research program is continuously challenged by the experimental design work thus establishing the strength of the program beyond the individual experiment in an overarching knowledge contribution.

Thinking of research activities as both addressing academic interests and intervening in particular contexts, suggests multiple layers of design research practice [5]. Fallman addresses this notion by proposing an interaction design research triangle [6]. This model illustrates three basic perspectives of interaction design research, depicted by the angles as; design practice, design exploration and design studies. Where *design practice* denotes design work carried out according to e.g. commercial aspects, *design exploration*, also describes a dedication to specific design work; it is, however, initiated by a “what if”. And finally, interaction design is committed to *design studies*, which denote academic and analytical design work. As argued by Fallman, the use of the three perspectives in combination distinguishes interaction design research from other related disciplines e.g. Computer Science [6]. In the design process, the interaction designer concentrates on a “designerly” way of knowing, thinking and acting [4].

The contribution of design knowledge both lies inherent in the design process as well as in the design artefact itself. In the first case, the knowledge is elicited through engaging in and reflecting upon the activity of the design [4]. In the following we substantiate how the method of sketching helps the designer reflect upon the design process.

The use of Sketching in Design Research

If the design researcher is to truly connect with design practice, she needs to understand the complexity of the design. Nelson and Stolterman [14] argues that designers need to handle complex problem solving – and cannot be guided-in-action by detailed prescriptive procedures but only be prepared-for-action. This promotes intuitive actions

and encourages sensitivity to a situation. However, to value the rigour in design research, the designer has to identify the research contribution in relation to the implications for design practice. And to advance the rigour, Stolterman outlines a range of particular areas, which he terms “forms of design support” [14]. Stolterman stresses, that these forms can take various shapes; precise and simple tools or techniques e.g. sketching helps designers to identify the contribution in relation to design research [14].

When we are consciously not-knowing

Sketching is probably the most common way to materialize ideas. However, it is more than just visualizing the images in the designer’s mind. Sketching is a dialectic type of argument [10]. According to Lugt [17], sketching is relevant due to 1) supporting a re-interpretive cycle in the design thinking process to the individual; 2) Supporting the re-interpretation of each other’s ideas for group activities; 3) Enhancing the access to earlier ideas. In line with the first argument, sketching is a useful tool for designers to visualize and be attentive to different design sensibilities which for design researchers are useful as a means to answer the research question.

To handle the complexity of design, a designer has to accept that the new designs cannot be fully understood during the process. It is not fully possible to predict with accuracy how the design outcome will serve the world and in turn; how it will change it [14]. Through sketching, designers deal with “wicked problems” [15][2], understood, as problems that can never be solved as true or false, but rather approached as good or bad. Wicked problems are concerned with designing for a desired reality, and the design has no subject matter of its own apart from what the designer conceives it to be [15]. Given the complex nature of the design problems, Nelson and Stolterman [14] emphasize that design knowledge requires an initial state of intentional ignorance. They introduce the term “conscious not-knowing” [14], which is essential to the production of design knowledge. To stay focused in the design process, a designer needs to be consciously not-knowing to irrelevant design concerns. Whether the designer produces knowledge in a commercial or scientific way, design inquiry calls for limitations and sensibilities. Constraints are necessary, given the complexity of the design problem [15]. Unknown knowledge is grasped through design inquiry in continuous conversation with the material. As a consequence, experimental moves are made, letting the designer jump from one solution to another [16]. The moves are necessary to make, as they visualize whether or not a solution is viable through results including intended and unintended consequences and qualities.

TAKING A CLOSER LOOK

In the following we introduce a design example originating from a design process carried out within a PhD project by a *creative* designer [12]. We use the design case to exemplify how the dilemma of the design researcher becomes tangible in a design process when having to answer to both a

research- and a design program. In the following we are going to give a short introduction to the PhD project in order to exemplify how design decisions are made on the grounds of the research program while the design program exists in the conscious not-knowing.

In short, the overall objective of the project has been to investigate the potentials of Kinesthetic Empathy Interaction (KEI) [7] [8]. KEI emphasizes and build upon the kinesthetic relations of the participants. In this type of interaction, it is crucial for the participants to read, react and build on each other's movements while interaction with the system become secondary. To do so, participants utilize kinesthetic empathy, the empathic part of humans' innate bodily intelligence and memory.

Introducing the case

The diagram (fig. 1) illustrates three different design ideas for a piece of interactive playground equipment where the main objective is for the participants to have fun while acquiring elementary motor skills motivated by Kinesthetic Empathy Interaction. As playground equipments, the ideas are perceived differently while as research artefacts they are very similar. The playground equipments are experienced as swings that you stand on, cones that you tilt while standing in them and wobble-boards that challenge balance. Similarities adhere to the research program and are not necessarily visible in the overall concept. In this case, for exploring a particular research program, it is not important whether the outcome is swings, cones or wobble-boards as long as they promote KEI.

DESIGN IDEAS			PHYSICAL DESIGN CONSTRAINTS			
			# of participants	Collision	Controllable	An extension of the body
SWINGS			3	yes	to some extent	yes
TILTING CONES			3	yes	to some extent	no
WOBBLE-BOARDS			3	yes	yes	yes

Figure 1: Three design ideas and the physical design constraints from which they are derived.

The diagram highlights the physical design constraints thus pointing towards the similarities of the equipment. The design constraints prescribe the number of participants, the fact that the units should collide, that they are to become an extension of the body [11], and finally that users should be able to gain complete control over them. Together, these articulate the type interaction space desired in order to promote Kinesthetic Empathy Interaction. We will not go further into detail with the nature of each of the design

constraints due to the limited space of this paper but more information on the project can be found in [8]. The idea of the swings was rejected because it would not provide users with the control needed in order to precisely plan where and when to bump into other swings. The cones were discarded because they were too difficult to control but also because the tilting forced the participants into unnatural positions that they intuitively counteracted. The last idea containing the wobble-boards was eventually further developed into an interactive equipment and used to test the concept of kinesthetic empathy interaction (see [8]).

The case illustrates that while several of the design ideas could potentially lead to great playground equipments they were rejected because they did not sufficiently fit the predefined research program. They were disregarded because they did not embody the intended type of interaction that would produce the specific kind of knowledge needed; not because they satisfy the main objective of creating a fun and challenging equipment. One could argue that the idea of cones would have been rejected anyway as they were unnatural in use. The physical design constraints concentrated on promoting a particular form of interaction and did not revolve around creating a fun and engaging equipment for the children. The objective existed in the conscious not-knowing but in terms of generating the desired knowledge was not important and therefore was not articulated as design constraint.

The Design Researcher in Quandary

As illustrated by the design case, is the pursuit of the research program that propels the design process and not the desire to make great products. As creative designers, we are trained to serve a client by providing successful products. In practice-based research, the designer should be aware that there is a new client to serve. A client that is not concerned with the commercial aspects of the products but is driven by what kind of knowledge the artefact provides. When acknowledging that there exist two clients with different agendas, the challenge of managing both at the same time is made visible to the designer.

Knowledge production and the creation of desired products often go hand in hand, but for the creative designer [12] practicing research, the dilemma emerges when they do not. Perhaps, for those who do not have their professional upbringing within design, this sounds like a trivial decision to make. But as a creative designer, contradicting what Fallman describes, design is not a role that is put on and taken off as it defines the way you work [18] [15]. The dilemma does not revolve around choosing between producing knowledge or making the best possible product as the objective is predefined by the research program to which the design researcher is obliged. Instead, it points towards a predefined hierarchy of design sensibilities; highlighting the importance of having a strong research question and an awareness of the design sensibilities, that are not articulated but exist in the realm of conscious not-knowing. One of the main challenges in these types of

research projects is balancing the relation between knowledge production and designing new products and how to serve both clients at the same time without neglecting one or the other.

In a design process, a range of experimental moves [16] are made which provides the designer with results including both intended and unintended consequences. It is through this development and refining of ideas that a design artefact evolves and move in directions that are impossible to foresee or even control. Sometimes ideas evolve that fall outside one's predefined research program [1]. This either points toward a revision of the program or a rejection of the design idea. If a situation occurs where the design researcher is forced to make a lesser design artefact to generate the needed knowledge, it would seem relevant to evaluate the justification of the research program within that specific context. Because it is one thing to unintentionally design something bad, but to design something knowing that it is not for the better for the sake of conducting research seems to violate the very definition of design as the art of creating a desired reality [15].

CONCLUSION

In practice-based research projects, we acknowledge that two clients exist and that dilemmas may arise when having to serve both at the same time. Through a design case, we have illustrated how design is not a role that is put on and taken off when a certain situation calls for it. We have shown how design ideas are assessed based on the type of knowledge they provide and not on their aesthetic or experienced qualities. In the article we shed light on the dilemma occurring in the sketching process, however we do acknowledge that the design researcher is met with the challenge of balancing both knowledge production and the creation of new desired products in other design situations as well. This indicates a predefined hierarchy of design sensibilities, and why it is not a trivial decision of choosing between producing new knowledge or making the best possible product and the importance of having a strong research question. We conclude that the design researcher is in fact in quandary when embodying the conflicting role of being both a designer and a design researcher.

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