CONCEPTUALISATIONS IN DESIGN RESEARCH.

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This is a design theoretical paper and a mapping and explanations of different types of conceptualisations within the field of design. The aim Is to clarify the aim and position of design theory, In relation to design and design research. The paper distinguishes six different types of conceptualisations and ends with some questions regarding how design theory and research quality can be promoted.

This is a design theoretical paper. It is a theory based exploration of the issues of conceptualisation, which is a central issue in both design and design research although generally given little attention. This is an attempt to clarify the distinctions between different types of conceptualisations within the field of design research. I will construct a map of conceptualisations in design related processes. In a sense my aim is to clarify the position of design theory in relation to design research and design. I will start with some general aspects of conceptualisations and how they are used. The main part of this paper consists of descriptions and illustrations of the different types if conceptualisations I have found. In the latter part I discuss some obvious controversial aspects in my interpretation and provide some defending arguments for my interpretation. I also discuss the implications for design epistemology. What should design epistemology focus on regarding the issue of conceptualisation? What would be fruitful to study in order to strengthen design research and the understanding of design? I think progress in design epistemology is foundational for design research and the quality of research methods and research findings.

To start with I think I should address the meaning of the word conceptualisation. My English dictionary translates *conceptualize* with: “göra sig en föreställning om” (2000). The word *concept* is translated with: “begrepp, koncept, idé, föreställning, princip” and the word *conception* with “föreställning, uppfattning, begrepp, begreppsförmåga, begreppsbildning, befruktning, avlelse”. It seems that it similarly to many other concepts is a word with a variety of meanings. I will here interpret it as something conceived in concrete form (and not only in the mind) like a text or word, an expression, a plan, a design, generally as an expression of an idea, or thought. Interesting here is also an explanation from the perspective of artificial intelligence which defines conceptualisation as: **“**The collection of objects, concepts and other entities that are assumed to exist in some area of interest and the relationships that hold among them. A conceptualisation is an abstract, simplified view of the world that we wish to represent. For example, we may conceptualise a family as the set of names, sexes and the relationships of the family members. Choosing a conceptualisation is the first stage of knowledge

representation" (The free dictionary 2007). I also found an explanation related to design: "design, plan or arrangement of line, form, mass, color, and space in a pattern. A design may be created to serve a functional purpose as in and in industrial designs or else purely to provide aesthetic pleasure. The design may refer to preparatory stages for a work of art, or it may be extended to include the compositional elements in a finished work of art" (The free dictionary by Farlex (2007). This last one is not foreign to the linguistic design practices I know, where we make a distinction between an early sketched proposal and a later detailed design.

I see my reasoning here as a contribution in the tradition of design theory, a field of systematic investigations of design processes and a thinking across disciplinary borders and with the aim of profiting from such a cross-disciplinary approach. As a central proponent Simon (1969) is often mentioned, though also often dismissed as giving no real support to this development. My epistemological understanding of design theory is based on a pragmatist perspective stemming mainly from Dewey (1938), Rorty (1982) and a wittgensteinian approach as expressed by Lundequist (1995, 1999). I take concepts and theories as tools for thinking and reasoning. According to Lundequist's interpretation, based on Winch's proposal for a new type of social science (Lundequist 1998, 6), the lack of conceptual understanding is typical for design fields. This is an obstacle in the description and communication of ideas, relations, actions etc. Secondly, I assume that *truth* is an issue of little potential in the field of design research and thus of little interest in an epistemological discussion regarding design research. Instead of this I find the ideas of Giere (2004) interesting and illuminating. He proposes that we should look at modelling and mapping methods. Maps, as well as theories, are reductions of reality but function as means for understanding and acting on phenomena in reality. The maps can be of different types; a topographic map or a street map. They are very different but both very useful in their right setting. It is very difficult to find the way by car by the means of a topographic map (if no streets) but it might be useful while trekking in the mountains. On the other hand a pure street map is of limited use if you are trying to find a convenient route with little steep mountains to climb with your bike. Thus, one central task in design epistemology (and design research) is to produce maps and models of design related phenomena. As I see it, this is a social constructivist approach. The accuracy lies in the correct positioning, i.e. seeing the maps and models in their right setting. Secondly, the fit with reality is a measure for accuracy. A street map where one new street is missing is seen as outdated.

Here I also think it is necessary to include a discussion considering the impossibility or difficulty of describing and defining design processes and design thinking. Most design researchers agree that design thinking to a large part is based on tacit knowing, and that this knowing is impossible to describe in any comprehensive but simple way – in the form of a few definitions or a theory. The answer to this is that we don't have to see simple theories as the only way of presenting research findings. In the tradition after Wittgenstein it is also possible to show examples of actions and practices, or to show that we can act within these practices (Lundequist 1999, 21). There are many potential ways of addressing design with systematic inquiry and ways of presenting findings. Still, as a reminiscence of the domination of science in the field of design research, there is a will to describe the design process in a universal manner, but this is only a minor step into the project of design research. A simple straight-forward universal description of the design process and some definitions are possible as a starting point. In a design theoretical investigation this must, however, be taken through the double problem of *contextualising the approach*, and *targeting the broader community* of various design research disciplines with the *conceptualised findings*. Thus the findings will have to take such a shape that it is possible to communicate it and reach this kind of audience.

How are concepts used? Generally speaking we use concepts in our communication. We need words to express our thoughts and needs. In our educational systems conceptual understanding is a central means for teaching, learning and examination. Design education has often a different orientation but we still very much relay on concepts in our communication. It is also often assumed that concepts are central in thinking. I don't think we need concepts for thinking but they are a good tool for thinking, especially in organisational learning settings. Finally concepts are of course very central in scientific practices, both in natural sciences and social sciences. To take an example: When I meet an old fisherman at home he might say that the sea has been high lately and claim that this is the reason for unstable weather conditions and bad fishing. This is of course a conceptualisation of the weather conditions and a theoretical conclusion. He is of course a very practical man but still have to use these explanations in order to make me understand that he has no fish to sell. If I dig into literature on meteorology I will find explanations regarding air pressure and its relation to sea levels and weather conditions. I will also find a standardised format for measuring air pressure, expressed as a formula. I will believe both the fisherman and the literature but if I get into a conflict on any detail I will be given an opportunity to question both types of argument, but will normally take the findings based on systematic inquiry as the better one.

My map of categories of conceptualisations within the field of design includes six distinctive types. Scientific investigations of design could be taken as a seventh – a very formal way of conceptualisations of design phenomena. The categories are:

- Design reasoning within design processes
- Design criticism
- Design research as efforts to articulate and explain disciplinary oriented aspects of design.

- Design theoretical research as an effort to articulate and discuss aspects of design on a cross-disciplinary level.
- Epistemic research on design research and research methods.
- Design as a futuristic mission

To start with the normal design processes normally include reasoning partly running parallel to the design process, partly intervening with the design process. Typically we might sit quietly sketching but when asked what we do or when asked to present it to colleagues, clients or users we do our best to express qualities of the sketched design object and maybe also something about our thoughts and the process. We conceptualise our ideas, the qualities of the object, the qualities of the process and they constitute some sort of elements in our communication with others. The communication is accompanied by drawings, models, actions (pointing out, showing aspects, confirming nods, etc). The client can criticise my proposal by pointing at some part of it and by shaking his head, but it is more fruitful for the conversation if he expresses his criticism as comments on perceived qualities, or lack of quality.

Criticism is expressed already in my communication with clients and users, but we also have a systematic or partly formalised culture of criticism. We expect a critic in the newspaper or a journal to analyse and criticise a designed object in a specific way. There are many exceptions here, but still, there is a strong culture around criticism, and rules how to organise it. I think it is similar to Giere's ideas about presentations of research findings (2004). Criticism should take the form of a map that supports others on their path to experiencing and analysing the criticised object, with some descriptions and some efforts of pointing out significant features and finally presenting some evaluation.

In design we also have a peculiar type of practices that are designerly in their approach but that show significant differences compared to normal design processes. They are very much about conceptualising the future or changing it. In the cultures of architecture we have the tradition of architectural history, studying and explaining objects, processes, backgrounds and relations to other historic events. Architectural history is very much an iconography of essential objects and ideas to know and to have seen. It is about knowing and telling the right history and how today's architectural ideas came into being. These ideas are controversial and fiercely debated constitute a central field in architectural thought, to which many scholars and practitioners try to relate in order to interpret and understand current architecture. Research in architectural history, on the other hand, as history research in general, can be devoted to whatever subject and show a greater variation in scope. Peculiar enough we also have a tradition of designing conceptual frameworks for the future of architectural design. They take the shape of manifestos, concept designs, and design projects without a procurement order or a client. These futuristic practices have a high status among architects. The results are often published and discussed and often presented as exhibitions. A famous example from the beginning of the postmodernist era is Leon Krier. It is a tradition with strong roots at least back in the beginning in the modernist movement, but also earlier in the art academies. This production is of course conceptualised, but what I want to point out is that they at the same time are conceptualisations of the future, by means of arguments, drawings and design of future products. In a bourdieuan interpretation they are often used as attempts to criticise dominating ideas and the power of the establishment of the field, in order to get access to the top of the field (Östman 2005).

Keinänen has presented a methodology where this conceptual design practice is formatted into a more rigorous format, with the aim of attracting the interest of design markets. It is about producing a conceptual proposal for the future of a product or product types of a company (2004). His idea for this type of conceptualisations is to include a substantial amount of research based information and knowledge in the design of a future product. The aim is not like in normal design projects, to respond to an order for a new product for the market and the client, but the aim is to develop a shared understanding and an organisational learning process, where the outcome is a single designed object which will not be produced. Its usefulness lies in pinning down current ideas about technological potential and market expectations to one single product. The variety of reasoning and pros and contras have to be put into a definite context which will ask for more accuracy and rigor from the designers and their conclusions and arguments, compared to what is expected if they are only presented in various reports on different subjects. The potential usefulness of this approach Keinänen sees in its potential to grasp future development and prepare management and consumers on products to come (2004). It also produces organisational learning and a shared vision with definitive qualities. This is mainly an approach for pioneering design offices and companies and those aspiring for such a position.

Within design research I assume that communication of findings is a central part of the research process. Research is very much a practice and based on rather practical methods, but in the end we have to communicate the findings to the community of design researchers, commonly seen as a test of validity. If it is understood and accepted within this community as a contribution we have succeeded. The communication can be based on diagrams, drawings and schemes but the central tool is theory and conceptualisations of phenomena. The precision of language makes it suited as means for expressing conclusions etc in an exact way that make external criticism possible and efficient.

The distinction I make between design research and design theoretical research is based on which audiences they address. Design research normally addresses the community of scholars working within the same

disciplinary or professional field. Due to the need to have a hands-on knowledge of design, design research tend to be an activity conducted by researchers with training as designers. There are of course research efforts, too, from a more external perspective. However, the point I want to make is that conceptual models, theories and propositions of design theoretical research is targeting a wider interdisciplinary audience and a communication across disciplinary boarders. The aim here is learning from other professional fields and the exchange across disciplinary and cultural borders. This approach is of course dependent on a shared vocabulary and of finding a level of communication that allows for cross-disciplinary communication, which is not easy. It will also take place at a level of abstraction that leaves out more of the particularities of the design context, as we are to share the understanding with scholars not familiar with our professional field.

I initially thought that epistemic research on design research and research methods would be part of design theory, as a matter of conceptualising what we do or should do when conducting research – the epistemic and methodological discourses and investigations of design research. As I now see it, it is a natural ingredient in design theory. We need a continuous inward looking investigation of what design research is, and internal criticism of methodologies, approaches, findings and assumptions. Interesting is also the question: What is worth studying and why? According to Giere it is also necessary to ask what the successes are that could legitimise further (design) research efforts (2004). As I see it today, it is possible and very common to keep the epistemic discussion within the disciplinary borders. Research into engineering design is discussed as a matter of engineering. Architectural research is seen as having a specific contextual setting which needs a specific epistemology and methodology. Still, if we see design theory as a valid and interesting approach we can also claim that we need an epistemological discourse of this kind, too. It can be about methodology, about communication of methods, or on the historic traditions of design theory. As I see it, it has a specific aim in addressing potential for cross-fertilising and criticism across disciplinary borders. Many research cultures tend to become specialised, but also blind to certain ideological claims. The outside perspective or the introduction of foreign ideas is a good way of refreshing the input. I also think it is genuinely valuable to discuss quality of research, and research standards to some degree at this level.

I see the explanations above as a map of different categories of conceptualisations in design related practices. I do see that there are overlapping and further distinctions to make, but I'll leave this to a later discussion. The main target for my discussion is the epistemology of design research and design theory. First of all we can of course ask: Why conceptualise design thinking and design processes? Most designers can manage without any research based knowledge of what they are doing. Designers don't need theory of design thinking and design processes. They know how to design and prefer theory of objects and qualities, materials and similar fact oriented issues. We also have the difficulty or impossibility of expressing creative thinking and designing in words. My answer to this is that we need conceptualisations. In design processes we normally have a satisfying vocabulary at hands, earned trough training and exercise and confrontations with different audiences. In the case of futuristic projects it is clear that the conceptualisation process is necessary for the learning and communication, and this is about development. Furthermore, I think design managers, design educators and design researchers need a comprehensive vocabulary and conceptualisations of design phenomena that in normal practice might not need any deeper explanation. We also have a cultural ideal saying that systematic research into an issue might prove valuable despite the obvious uselessness in the current state of art. I find this categorisation enlightening as a map by which I can sort different types of design and inquiry, and make the distinction between design research and design theoretical research more clear. The aim of this map is to direct design theoretical research towards new and interesting issues. Thus I will end this paper by asking a few questions:

- Where or how has design theory been useful to design research?
- Which are the promising issues to discuss on a cross-disciplinary level?
- Which kind of epistemic standards do we have for design theoretical research?
- What do the futuristic design practices look like in other design disciplines?

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