Design theory is a philosophical discipline - Reframing the epistemological issues in design theory

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Abstract

Design is inherent in human cultures and living practices. Design is irreducibly intertwined with the art of living, with the production of means and objectives of existence and with preparations for human experiences. In this paper I propose some borderlines for design theory. Design research is not a social science, nor a natural science. It is a philosophical enterprise. I use the philosophy of Dewey, as an epistemological framework for design theory and his interpretation of philosophy. One reason is that it includes an appropriate reasoning, supportive of the design oriented understanding of knowledge. I think design theory is a necessary undertaking, condensing the ideas coming from various design fields into a bulk of shared understanding. It is only a narrow philosophical discipline. It is different from design research and design disciplines, which tend to diverge and will continue to do so. The pragmatist philosophy provides reasons for design theory. It is not about pinning down knowledge to a simple and fixed truth, but to address problems, and promote understanding by clarification, reasoning and criticism. We also have to clarify where we stand and how we see design in a larger, philosophical perspective and provide useful theories for those struggling with design research, teaching and management, because there is a general lack of conceptualised understanding of design.

Keywords: design theory, pragmatist philosophy, epistemology

Introduction

Human culture and living practices are largely constituted through design. It is not only a professional practice, but a common competence of man. Design is irreducibly intertwined with the art of living, with the production of tools and with preparations for human experiences. It is a professional practice, with great influence on such different matters as political organisations, engineering and media. This paper makes a distinction between design research and design theory. Design theory focuses on the shared stock of knowledge, reflecting on similarities and differences between theories, models and design thinking in various fields. The
approach is integrative, striving to establish shared theories on the basics of
design processes.

The goal of this paper is to test some ideas, by presenting a proposal. To
start with I would like to point out a distinction. Research into design
processes is better not seen as a matter of social science, nor natural
science, but as a distinctive scientific field, with a distinctive epistemology.
I have picked out the philosophy of Dewey as a philosophy favourable to
the characteristic type of knowledge inherent in design processes. I think
his philosophy is suited to support the creation of a design theoretical
epistemology. Dewey’s philosophy includes a reasoning close to design
knowledge. Dewey avoided a reductionist understanding and put the
emphasis on practice, relations and processes. In this sense the task of
design theoretical reasoning is not to pin down knowledge to a simple and
fixed truth, but to address problems, promote understanding by
clarification and criticism. I think design theory is a necessary undertaking,
condensing the ideas coming from various design fields into a shared stock
of theories of design. It is commonly accepted that there are some shared
features in design, shared among all design fields (Simon 1969). One
problem is that design practice, design research, design theory, design
knowledge and design research methods seem identical or show that much
similarities that the differences are difficult to distinguish. I think they will
continue to be intertwined, but I also think that we have to organize all
these issues into a robust structure, a structure that can support researchers
in their positioning in the field and their research activities. What we need
is a theory of knowledge, fora for interaction and internal criticism and
some minimal agreement on what we share and what we don’t. My
proposal is that design theory is a narrow philosophical discipline. In order
to manage the pluralism of design research and to profit from a shared
understanding of design I think we need a distinctive research field devoted
to the shared features of design.

The paper is organised in three parts. I start by positioning design and
design theory and clarifying the concept. The second part is about design
knowledge, as an important issue in an epistemological proposal. I relate to
the ideas of Donald Schön, Jerker Lundequist, and to the ideas of John
Dewey. In the end of this part I construct some interpretations through the
lens of the pragmatist philosophy. The last part is a discussion regarding
the proposed structure and reasons why design theory should be seen as a
philosophical field. I conclude by discussing research in the field of design
theory.

Positioning design and design theory

Design theory is a marginal discipline and its existence and usefulness has
often been questioned by practitioners, resulting in different attempts to
justify its existence and by proposing that research must be conducted in a
close relation to design practice. I, on the other hand, propose a structure
where design as a form of design research, which is distanced from the
day-to-day inquiries. It has had little influence on design practices and
received little attention from the other high profile research communities. I
think this has come to an end. Theory of design is in a state of change –
including some options for a big change in epistemology. In recent years
the interest has increased, mainly due to the new parties interested in
design, seen as a process creating innovations. Innovation plays an
important role in the current theories of macro-economic growth and
successful business performance. New research communities, e.g.
management science, and marketing research have taken an interest in
theories of design. The design research communities are obsessed with the
question of praxis and its relation to research and we are often caught in the
question whether there is any potential usefulness in design research and if
design can be seen as research. Most practitioners aren’t interested in
design theory. They want useful information. They want to try out new
ideas, focus on design problems, on potential objects and their qualities.
They know the design process. They know how to design.

Most scholars agree that it is very difficult to improve the skills of the
design practitioners by teaching theory. On the other hand there is a need
for a theoretical understanding of design. We need to discuss it, to manage
it, and to develop it, and theory is a good vehicle for this purpose. Design is
important in many different processes and successful design can reduce
negative effects, create added value and meaning, and promote cultural
development. Design research and theory are tools for improving the
understanding of these issues. The theoretical findings of design research
can be useful at the abstract level of discussing design problems, methods
and the organisation of design processes. In the long run it will also
influence the design practices. Science in general is seen as efficient, but
said to have a delay of something like 30 years before it enters
implementation. I think this is true in the design field, too.

The meaning of the word design is ambiguous and denotes various things.
First it denotes both the process and the object. I find at least three other
interpretations of the word:

- Design is a professional activity – largely executed as a technology
  oriented professions
- Design is a kind of knowledge, necessary in all professional activity
  (Schön 1983)
- Design is a distinctive type of knowing

The characterization of what good design is also varies. The expectations
can be:

- An unproblematic process, producing predictable results (good
  performance)
- To create objects desired by the consumers (desirable mass product)
- An artistic production resulting in an object celebrated by the critics
  (work of art)
- The generation of innovations (innovation)
An interesting process and result, important to the designer’s development (personal experiences and development)

In design we have to deal with knowledge that is not explicit. Much of the intelligent actions by designers are based on knowing without using formalized knowledge. To some degree we can support our actions by routines and more or less formalized methods. We can also apply explicit reasoning, rules and information. The central tasks in design according to Schön (1983) are:

- To find the problem.
- To experiment and test ideas.
- To judge
- To present the solutions and reasons

One distinctive borderline we have to discuss is the demarcation between artistic design and non-artistic design. We can, of course, try to strengthen design performance by means of theoretical knowledge, or we can say that the most important thing is intuition, good judgement and taste. I think all this is necessary but I also see that the field theory of Bourdieu (1984, 1996, 1998) can add nuances that provides help in distinguishing structures in the field of design. I prefer to see design as based on training into the traditions of the culture, knowing what is good or bad, and potentially where one may break with the rules to find something more appropriate. Taste, tradition and a proper understanding of the elite of the field are essential tools for a successful activity in design. I have no proof but I have reason to believe that the distinction between artistic and non-artistic design fields is misleading when discussing design. There are also other inherent obstacles. Artistic designers tend to study the design process from the inside, whereas management and engineering research is often conducted with an outside perspective, interested in enhancing productivity. Artistic designers tend to focus on the inherent values and thinking in the design process. I assume that a comparison of research findings might be fruitful, but we lack a shared vocabulary.

Design knowledge

In an epistemological discussion concerning design, knowledge is a core issue. Very much of the current understanding is based on the idea proposed by Simon – seeing design as a specific type of knowledge (1969). Still, it has been difficult to make any progress concerning this issue. I here find the ideas of Dewey illuminating and combine them with a praxis oriented understanding of knowledge, stemming from Wittgenstein. Basically it is less a question of defining knowledge as it is a method of addressing and investigating problems. My intention here is to point to several sources, showing different aspects of design and of how to comprehend intelligent action that cannot be reduced to simple theories. My intention is not to define design knowledge but to provide a perspective. Knowledge is an ingredient in both design action and in design
research. This makes it all more difficult, because that means that we, in research, have to construct knowledge about knowledge. A more clear way to express this same thing is to say that we in design theoretical research construct theories about design practices and design knowledge.

One central point in design theory is the idea of tacit knowledge. Design thinking is said to be tacit, because it seems to be “outside the bounds of verbal discourse” (Daley, 1982). Designers cannot accurately describe what they are thinking when they design. This sets an obstacle to scientific research where findings are presented as descriptions. It seems that design thinking is better expressed by means of examples and by showing how design is done than by descriptions. An epistemology has to deal with the problem that there is very little objectifiable knowledge. Design knowledge is more something of knowing, or a guiding intellectual capacity embedded in human action and practices. Donald Schön made a contribution by developing a theory of the actions of professionals and on how professionals think (1983). Much of his ideas are related to the idea of professional practice seen as a kind of design, where the agents are “engaged in converting actual to preferred situations” (Ibid, 77). Out of the problem solving behavior of architects Schön developed a set of steps typical for professionals’ problem solving (Ibid 128ff). He presents a simple model of design actions, including a few steps repeatedly applied in design situations: problem setting, reframing the situation, experimenting with the situation and evaluating the changed situation (Ibid). Schön’s thinking has a close relation to the ideas of Dewey and the steps mentioned are similar to those that we find in Dewey’s research methodology1 (1938, 60ff). Schön also gives an elaborate argument for the need to acknowledge the differences between scientific knowledge and the knowing inherent in professional practices, arguing that the scientific mode of thinking and representations of knowledge - as theories or data - is not sufficient to cover the design thinking (Schön 1983, 287ff).

There is a significant tradition of knowledge in Scandinavia, developed not as design knowledge but still in close connection to the thinking of Donald Schön. It has, at least partly, some of its roots in the ideas of the later Wittgenstein and a discussion at the National Institute for Working Life about computerization and the erosion of professional knowledge. This tradition is focused on the knowledge inherent in practices, its qualities and how we acquire this knowledge, and the intention has been to articulate this type of knowledge – in contrast to information which is stored in books and computer files and can be processed by computers. Much of the design knowledge will remain tacit and there can be no total display of it. The possible conceptual models that can support our understanding of these matters will remain rather vague. Some of the characteristics of this type of knowledge are: attention, responsibility and dialogue (Molander 1996, 241ff). According to Rolf tacit knowledge provides a framework for attention and a context for explicit knowledge elicitation (1991, 63).

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1 Dewey’s theory of research is actually a better source for understanding his view on creative action. It can be found in a condensed form in chapter 6 in his Logic- The Theory of Inquiry.
According to Lundequist design consists of four connected and overlapping moments: processes of negotiation and decision making, management of information, artistic processes and finally moments of resolving or management of design problems (1995). Design is action in a situation of uncertainty (ibid). It unifies such diverging aspects as technical, economical, ergonomic, psychological and social demands (ibid). The goals are ill-defined and part of the design process (ibid). Based on Schön’s theories Lundequist claims that design is not a question of solving problems but of managing problems in a virtual world. It is a process of finding the problems and the means (Lundequist 1995, Schön 1983). Design includes management of conflicting values and the organisation of a supporting rational reasoning (Lundequist 1995, 84). The action-oriented knowledge is expressed as a practical reasoning (Lundequist 1999B). The reasoning is about good or bad, not about right or wrong. The reasons cannot be empirically fully tested, but it gradually contributes to the determination of the object being designed (Lundequist 1995). One basic notion about design is that it is very complex and embedded in cultural practices. According to Lundequist ‘[design] practice can be seen as a rule based practice – as a language game’ (Lundequist 1998, 10). There are no rules that define what a language game is but it denotes a relational situation, with some agents interacting in a foreseeable way (Ibid). A language game includes both concepts and actions (Ibid). We learn the language game by participating in the game. The rules are not explicit but there are patterns and conventions supporting our actions and participation in language games. Design problems cannot be described nor solved in the way mathematical problems can be solved. One major point in this perspective is that other people can identify the rules we adhere to and criticize whether we act in an appropriate way (Lundequist 1999, 10). This is also the way to prove that we understand the language game – by participating in a proper way.

Design knowledge might be difficult to describe, but it is not inaccessible for research. Nonaka and Takeuchi have been advocating a new theory of organizational knowledge as means of explaining innovation: “The cornerstone of our epistemology is the distinction between tacit and explicit knowledge. The key to knowledge creation lies in the mobilization and conversion of tacit knowledge” (2001).

In the pragmatist philosophy of Dewey human action is the source of reflection, which can be developed into a conceptual understanding constituting the framework for a trustworthy understanding of the world. He made no big difference between art and science. The basic pattern of inquiry he took from science – with its emphasis on the experimental testing and reasoning. This basic pattern of inquiry is only the method and no proof of the superiority of science. Dewey’s process of research is an experimental process, where reflection plays an important role. The first step is to localise the problem: “institution of a problem” (1951, 109). We start by clarifying the initial situation - what it is that requires a solution (1951b, 344f):
The risky character that pervades a situation as a whole is translated into an object of inquiry that locates what the trouble is, and hence facilitates projection of methods and means of dealing with it. Only after expertness has been gained in special fields of inquiry does the mind set out at once from problems; even then in novel cases, there is a primary period of groping through a situation which is characterised throughout by confusion.

A core concept here is “controlled inquiry”, i.e. controlled research. By this he means that research differs from everyday investigation in that it is controlled, and in that the circumstances should form a logical whole (1951, 65). Research is a continuous process that always strives towards elucidation and determination. Thoughts are at first vague but later become clearer and more concrete, supported by consciously controlled research (Dewey 1938, 110). An essential step towards profiting from experience is the organisation of it. Dewey also sees this as a step from something empirically experienced and based on the senses to an intellectual and objectified knowledge, at which emphasis is shifted from impressions governed by feelings to knowledge constructed upon concepts (Dewey 1951b, 647). In order to achieve this, we require language: “Without language, the qualities of organic action that are feelings are pains, pleasures, odors, colors, noises, tones, only potentially and proleptically. With language they are discriminated and identified” (1939, 804).

According to Visnovský Dewey represents a post-modernist position, regarding rationality which doesn't deny or totally reject the Cartesian-modernist rationality, but Visnovský sees it as 'reaching its limits' in today's science and culture (Ibid). The Deweyian conception of rationality encloses emotion and the anthropological context. One important point for Dewey was that an ideal and absolute rationality cannot provide support for the reasoning in real life investigations. Real life investigations are dealing with nature but also social and human values, established traditions and memory. Nature is not rational or irrational, as a given outside order, but nature is rational as it is, with its complexity and its tendency to aim at achieving natural ends, such as surviving. In the same sense human action is rational - not as a given ideal order but as rational actions in the interaction with occurring problems and situations (Visnovský 2004). Rationality is not a given set of rules, but it must be informed and it must be able to find its way. This is very close to design action, which is informed by human senses and cultures and never can produce anything outstanding if there is no interest in going outside the pure rationality - as a matter of constructing new solutions or evaluating proposed solutions. Dewey later changed the name of this rational attitude to intelligence (2004). The point is of course that the distinction to modernist rationality becomes clearer. Intelligence is operative and attached with judgement. In this kind of rationality it becomes an altering activity, guided by reason and judgement (Ibid). Visnovský concludes that Dewey's rationality is creative, non-cognitive, experiential, experimental and communicative, and can thus serve as a support for investigations into human rationality (Ibid), which I see as a crucial element in design thinking and practices.
The pragmatist perspective provides a lens through which we can interpret concepts. This makes the concepts more precise in meaning. They provide a set of conceptual tools that support the articulation, understanding and communication of features of design. I don’t think it is necessary (nor possible) to express these interpretations as definitions in order to make them operative. They are only theoretical explanations that try to express the most central characteristics. Some interpretations:

- **Design** is a controlled creative action. The control cannot be complete. There must always be space for changes and discoveries. One core issue is the creation of something new. A design process guided by reflection, explorations and by restrained and reason based judgement is a process of controlled inquiry. The outcome of design is an object accompanied by reason. Thus science is a specific form of design, where the result is expressed with a stringent set of reasons and all of them have to be explicit and based on reliable sources. The aim if science is explanation. Art is another specific form of design, where the final outcome is an expressive object. Art is design without any given client and it doesn’t aim at explanation but at experience.

- **Design knowledge** is a set of repertoires intended for managing problems, desires, values and puzzling situations, and for changing an existing situation into a preferred one. Design knowledge can not be transformed into information. Design knowledge is carried and applied by humans as actions for development. Still, information is an important subset of design knowledge. Design knowledge is primarily a knowing in progress and creativity is a subset in design knowledge. Design knowledge applies rational reasoning, but some of the reasons and influencing factors will always remain hidden. They are embedded in cultural and socio-historical traditions. Design reasoning can make use of explicit logic, but it is only one possible option in design reasoning.

- **A design problem** is not a single and simple issue, but rather a complex situation where we want to improve or change something. It is a situation of indefinite complexity, constituted by such major aspects as facts of nature values and social traditions. The problem is never purely a technical matter. If it can be solved with a ready-made solution it is not a design problem. Design problems demand evaluation and ethical judgement.

- **Creativity** is a dynamic capability to manage problems and situations and generate solutions that matches the expectations. It presupposes suitable repertoires and the application of Dewey’s controlled inquiry. The expectations can be fulfilled in various ways but must produce more than a mechanical answer to a given program. The creativity must address desires that cannot be expressed in a program, and which is better expressed by the word expectations. I interpret Dewey’s explanations of aesthetics (1980)
as a model by which to explain creativity; thus creativity is not veiled in a cloud of mystery. Creativity displays certain regular patterns. It is bound to the particular context, but also to intuition and mental processes. It becomes apparent that creative solutions do not simply emerge from nothingness but are constructed upon experiments, conscious reflection and good judgement.

**Structuring the design field**

I have tried to show that the process theories of Dewey can be understood as a theory of design, especially when combining his theory of art with his theory of research. It includes an appropriate reasoning, supportive of the design oriented understanding of knowledge. Dewey avoided the reductionist understanding embedded in the scientist world view, and put the emphasis on practice, relations and processes. The philosophy of Dewey is respectful towards aesthetic experiences and accepts a flexible interpretation of rationality, despite Dewey’s request for logical and stringent reasoning. It provides us with a philosophical framework for design theory. It is by no means complete, but I find no real errors in it. The advantage of Dewey’s philosophical is that it includes, not only a model of the design process, but a large set of explanations, touching different areas like artistic production, culture, technology, science, experiences and so on.

I propose that we make a distinction between design research and design theory. They are intertwined and partly they have shared methods, but they have different aims. Design research aims at improving the understanding of design in a specific field, whereas design theory aim at constituting an understanding of the shared design competences (and potential differences). The design research fields all have their own traditions, concepts and models. It is my conviction that it is very difficult to apprehend the stock of shared elements of design processes, if we don’t have an interdisciplinary area. I also think it is difficult to grasp the whole field of design, because it touches almost every field of life and many professional practices and developmental processes. I think design theoretical research is a necessary undertaking, condensing the ideas coming from various design fields into a stock of shared knowledge. Design research and design disciplines tend to diverge and will continue to do so. Intensified design research will produce even more specific areas of knowledge, distancing itself from the other design disciplines. I have chosen to use the word *design theory*, because design philosophy can be interpreted as a kind of theory on how to do design work - conjugate to theory of architecture, denoting a design activity on a conceptual level. As I see it design theory matches Simon’s “science of the artificial” but the connection to science is not appropriate, whereas the word theory denotes the fact that it is mainly a theoretical discipline in the generally very practice oriented design field.
What I am proposing is that we design a structure for the field of design theory, basing it on reasonable arguments and with a close relation to the pragmatist philosophy, till something better emerges. The benefits are that the structures are clear and we can try to manage the pluralism of the design field. As I see it the design fields would profit from a distinctive philosophical field devoted to the shared stock of knowledge. This philosophical field has to be detached from the commercialism and market orientation, and primarily devoted to research according to internal standards. In the light of Bourdieu’s field theory this seems even desirable, because the distance to commercial interests is one of the best ways of strengthening a cultural field (1998, 102ff). The attitude of the practitioners also poses a dilemma in design research. There is little space for design research that tries to gain acceptance both in the designer community and in the research community. Acceptance by practitioners is possible only in cases where the community of practitioners sees it as useful and appropriate to the artistic codes and the rhetoric of the field. This makes any attempts to formulate theories of design seem useless unless we address a different audience with an interest in the production of theories.

I still draw a borderline between Dewey’s philosophy, its aims and objects of investigation, and design theory. Dewey’s philosophy is not identical to the field of design or anything like that. Dewey’s philosophy is dealing with a lot of issues, stretching from art to research, and from common sense to scientific communication. I think we must limit design theory to the professional design practices, and related issues. Traditionally design theory has been focusing on these issues. On the other hand I do see that the human experiences stemming from designed objects need to be part of the core interest of design research and the reasoning in design theory.

If design theory is a philosophical discipline it is natural that the methods of philosophy are the methods of design theory – i.e. reasoning. The general tasks are to clarify concepts and theories and to criticize existing practices and models. Still, in a pragmatist perspective it is also important to take a designerly attitude and produce new ideas and propose changes, and try to alter perspectives and attitudes. There is no universal definition of what philosophy is. According to the pragmatist tradition there is no need to limit philosophy to an academic and purified reasoning, distanced from real life. Instead it should be a reasoning that is useful to human life, focusing on troubling problems (Rorty 1982, 31). Due to the fact that a large part of design knowledge is tacit and embedded in praxis I think design theoretical research will be dependent on a close connection to design practices and the designerly way of thinking. However, in order to strengthen the theoretical position in design I think design as a liberal art, which Buchanan has proposed (1990), might be a reasonable solution to bridge between the necessary foundations in practice and the need for theoretical analysis in research.
Concluding remarks

One answer to the question why I propose design theory as a philosophical discipline is that it doesn’t really fit into the categories of established scientific disciplines. I agree with Eisele that we should not dismiss the interdisciplinary stance in design theory (2004), but I reject her idea that we don’t need a distinctive research field. Design research is conducted in economics, engineering, social sciences and many other fields. The problem is that we can find little support for the idea developing the issue of a shared stock of knowledge through these approaches and the discussion dealing with design knowledge is problematic and neglected in some disciplines. I don’t think we can find external reasons for deciding to establish a distinctive research field, nor that one philosophy would fit better than any other. I think we need many perspectives in design theory, but we have to be clear about our position in order to promote a clear understanding and I think the pragmatist theory of Dewey includes a good portion of theory favourable to design thinking and design research. The major task is to reflect and apply the methods of philosophy on different aspects of the design process – to criticize and test ideas and theories by logical reasoning, but we will also need some kind of input. I detect three potential types of input:

- Borrowing theories from philosophy or other disciplines.
- Absorbing findings from empirical design research.
- Combining empirical research with philosophical reasoning, lifting the research findings from an empirical and specific area to the shared area.

The continuous analysis and rewriting of design history is a task that belongs to the field of design theory. History is not final but a process of continuously changing interpretations, largely dependent on culture and political interests. History is also a source to understand the field and a vehicle for generating new ideas. The obvious pluralism in design makes it difficult to write a simple, straight-forward design history, and this will fuel the field of design history with new and competing theories, which of course is fruitful for the field.

One of the most important issues to address in design theoretical research must be the ethical issues. Unlike science design cannot function without moral issues and individual interpretations and judgements. Design practice is filled with moral based thinking, mostly on a tacit level. Ethical thinking provides support for design action. The articulation, reflection and critical reasoning concerning the design ethical standards can guide action and prohibit mistakes.
Bibliography:


Biographical note:

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