

If everything is design, what then is a designer?

Design as an activity, a subject and an end product is expanding. Today we design everything from drugs to welfare systems. Society is an artefact where natural laws or science are no longer valid. But if everything is design and everyone designs what is then the *particular* competence of the practising professional in graphic, industrial or interior design? How can a design researcher contribute to the development of knowledge when it is argued that all research is design?

The background for the discussion is pragmatic rather than ideological and is based in the authors own practice as a designer, researcher and educator. There is a growing need to articulate and visualise design practice and research for a larger audience.

To handle and form complex forms into a coherent whole is suggested to be a central competence in design practice. It is argued that artefacts embody knowledge that speaks to us in an implicit manner. The ability to develop, use and understand the language of these materialisations is an important part of the designer knowledge in practice and research.

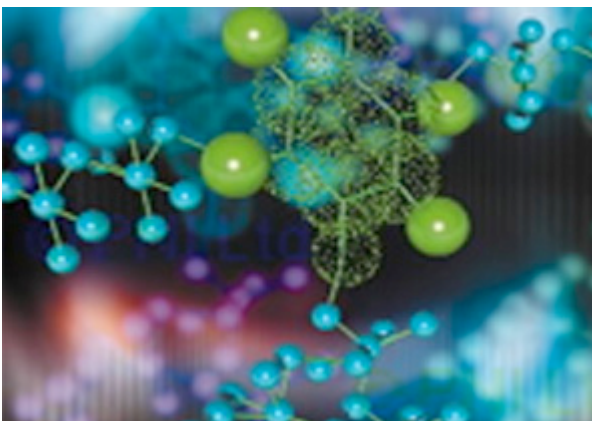


Fig 1. Design molecules, www.andrews.edu/~satkins/

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INTRODUCTION

Artefacts form the whole of our environment. We construct reality through acts that create material and immaterial structures: artefacts. Some of these are made by professional designers within the framework of the market economy; some are made by individuals for personal use, and some come about through the process of political decision-making. In all of these areas an interest in design is growing ever stronger.

There are no algorithms for how we shall build a good future, no natural laws that guides us how to create a good society. Social science becomes increasingly less dependent on natural science; in fact scientific activity is also something that is formed. New medicines are not only “discovered”; instead we form, create, and construct them. In short, we “design” them. Society and the artefacts that make up our world are the result of our own actions. “Everything” becomes design.

In the face of this relativistic abyss, we must regroup and establish some shared understandings of what it means to be a designer. What are the qualities and competences that a “traditional” designer might have compared to a chemist or a social scientist? Or is there a difference at all?

THE STATE OF DESIGN

In design promotion today design is told to be a tool for innovation and development. The design concept is losing connection to matter and products and becoming a strategic tool for decision makers. Danish Design council has developed framework called the “Design stair” were design maturity in companies are measured in how they use design. The ground is no design, the first step design as styling, the second step design as process and the final step design as strategy. All of these different aspects of design are often used simultaneously in a design mature company.[15]

This is paralleled in educations were design is courses has increased dramatically. Fifteen years ago there were two design high schools in Sweden with total 6 programs. Today we have 72 programs in “design and form” all over the country. [16] In addition to that we have 1178 programs and courses with “design” in the name but with a different educational belonging.

In fact it seems like design is spreading so thin it is arguable if there is something consistent in the concept at all. The Swedish Research Council (Vetenskapsrådet) went quite far in their publication “Designmedvetenskap” [10] were design research seems to include every possible research area – except design. Out of 40 researchers presented only five had a background in “aesthetical practice”, three architects, one artist and one textile designer. The research presented was widespread, with examples from molecular chemistry, biology, robotics, art history, landscape architecture, plastic surgery etc.

According to the preface a fundamental theme was to present “design as a conscious thought in science and research”.

If design research eludes definitions it certainly eludes research financing. In the Research Councils call for “Artistic research” (were design is included) 15 large projects were granted.

“Design” was mentioned only in one project as a subset to architecture. Several design researchers has witnessed that their application was turned down. It is difficult to know why this has occurred but one clue might be the lack of competence in design by the judging committees, as the problem with design to easily fit the category of “artistic” research.

But there is also the opposite problem. The large Swedish research financier “Vinnova” had a call for cooperation between technology and design. None of the projects granted had a designer involved and none of the applications by researchers with a design background were granted. One applicant asked Vinnova for the criteria for the judgement. Half a year later he has still not received the criteria.

So on one hand we have a problem that design is not “artistic” enough and does not fit into research programs in art. On the other hand, design is obviously not technical or scientific enough to fit into technical programs even if they explicitly state they should include design.

The Research Councils unwillingness, or perhaps inability, to define and present design research is characteristic for this problem complex. There seem to be a lack of knowledge of a) what design practice is, b) what a design education is and c) what design research is.

As a designer, researcher and educator the author is confronted with these questions on a daily basis. The aim of this paper is not to answer the questions, (which is probably not doable) but rather to point at the problem and to discuss one important aspect of design work, namely aesthetics.

Design as problem solving

Design theory in the 1960’s started with a wish to incorporate design in a scientific paradigm. After a few years the “Design methods movement” [3] met strong criticism and an insight that design has its own unique set of characteristics that needs to be studied in its own right. Many of these theorists started to regard design as something opposed to science, a way to handle conflict, insecurity and the unknown. An inherent human ability associated with imagination and problem solving.

Herbert Simon [13] noticed that we live in a world of artefacts but science is developed to study nature. He suggested a new science that deals with the manmade world – the science of the artificial.

Simon describes design as a basic human ability: *“Everyone designs who devises a course of action aimed at changing existing situations into preferred ones. The intellectual activity that produces material artefacts is no different fundamentally from the one that prescribes remedies for a sick patient or one that devises a new sales plan for a company or a social welfare policy for a state”*.

Ken Friedman [5] notices that the practice of design – making things with a useful goal in mind – actually predates the human race. A sharp stone used to crash a nutshell is a tool and therefore tool-making probably preceded human language. The physical potential of our larger brain gave rise to a successful tool making that changed our mental conceptions. As tool making and tools became the conscious subject of our imagination it helped us to survive and prosper as humans.

To use a stone to crash a nutshell is pre-human, but to decorate it and oneself is particular to the human race. During his anthropological studies in Brazil, Lévi-Strauss [2] noticed how natural categories such as “tree”, “sky” and animals were used for social categories such as tribes and clans. This totem language makes the social structure visible and gave form to a collective consciousness.

As civilisation moved on, the design task became more complex and specialised due to increased production of commodities and a market economy that demands a constant change in visual appearance. The modern, western culture we have today with its social structure, and economical system is

closely intertwined with the production of commodities. All of them have to be designed. We are all shaping and reshaping the world we live in and aesthetical judgments are part of our basic human abilities.

But if design is a general human ability what is then typical for the design profession?

The ability to give form, to realize an idea to a concrete artefact is what distinguishes design from general problem solving writes Bo Dahlbom. [4] He criticises Simon’s definition of design because it makes design synonymous with planning, decision-making and problem solving in general. *“An interest in the process of design rather than in its products will turn the sciences of the artificial into methodological disciplines, rather than substantive sciences of our artificial world.”* argues Dahlbom.

Erik Stolterman describes design and science as two traditions with different approach. Stolterman argues that, very simplified, there are two ways to deal with reality. One method “puts apart” reality to understand how it works, that’s science. The other one “puts together” things to create a changed reality, that’s design. [10]

This leads back to Herbert Simon who argued that design is about how things *ought* to be as opposed to science which studies how things *are*.

Another well known description is that the goal of science is to produce knowledge – the goal of design would then be to produce artefacts. I would add that the goal of science is to produce knowledge that is “true”. The goal of design on the other hand is not to produce any artefact, but artefacts that create a better world – in other words – artefacts that are “good”. We can go into length about what constitutes a good artefact, but I would like to argue that one important part is aesthetical quality.

UNDERSTANDING ARTEFACTS

Aesthetics is also known as theory of art or the beautiful. But in this paper aesthetics should be understood in the original greek meaning as “what meets the senses”.

Practical aesthetical knowledge is difficult to express and requires a large amount of pre-understanding, usually some kind of training in the same aesthetical language. It is often hard to point out explicitly what makes one chair so much better than the other one. Stolterman, claim that the ability to critically judge quality is based in aesthetical training and continuously developed by designers. [14]

Design educations are predominantly practical and with little room to develop a reflective approach to its own practice. Theories of design are rarely taught on design schools and students do not have the opportunity to develop a verbal reflective approach. Therefore designers develop a “feeling” to guide their decisions that is not made verbally explicit. Designers usually understand how to practically work, do and change the aesthetics of an artefact (phronesis) but they are not as familiar with knowledge “about” aesthetics (episteme).

Donald Schön remarks that you have to *do* something before you can *understand* it. This point at the need for professional designers to get involved in research in their own field. There is knowledge in the practice of design that a non-designer will have large problems understand but nevertheless of great importance that we develop and articulate. But the nature of implicit knowledge is often misunderstood.

Theory/practice is one dichotomy that has left a deep impression in our time. Like the dichotomies man/woman and culture/nature, they colour our way of seeing and interpreting reality. These conceptual orderings control our thinking to the extent that we “read in” these dichotomies also where they do not belong. In this way our worldview is continually confirmed through these personal experiences. An HCI researcher once related how he had worked with a graphic designer to create a virtual meeting place in a computer-generated three-

dimensional milieu. The designer had moved around some of the architectural elements in the image, and when the HCI researcher asked why, she answered: It works better. The HCI researcher used this in a lecture as an example of how designers work with “tacit” knowledge, i.e. that they do not use explicit arguments. For anyone with even a modest education in spatial questions, the change the designer made was completely natural and fully possible to express verbally. That she did not do so may have been because she did not think it was worth the effort to describe something that is so obvious. Imagine instead that a designer studies a programmer who is writing a program. The programmer moves a bit of code from one place to another. The designer asks why. How does the programmer answer? Probably he says something like “It works better there.” Does this mean that programming is a tacit practice? Yes, you may answer. But it may also mean that the programmer does not feel like explaining to a layman exactly why he did what he did. One more example: a researcher moves a bit of text from one paragraph to another. The designer asks why and the researcher answers: It works better there. The designer concludes that research is a tacit knowledge that cannot be expressed verbally. Or? With this example I wish to show that it is an advantage when the tacit knowledge of practice is verbalised by someone who knows the field. In this way we reduce the risk of being misunderstood or misinterpreted. It also shows how guided our thinking is by this built-in dualities.

The role of artefacts in research

Since Plato, the material world has had a subordinate position in the Western mind. For Plato the idea or concept was always superior to the actual object. Roland Barthes observed that in classic writing, “the writer is always supposed to go from signified to signifier, from content to form, from idea to text, from passion to expression.”

A good illustration of that is the ACM conference paper format that aims to de-identify everything that is personal and physical from the text itself. The paper format is designed to allow the content to be as transparent as possible without any disturbing material influences. It is very much a modernist, neo-Platonist approach, embodied in a text template. The result is of course the opposite. For anybody that have not been fed and bread with this awkward way of writing it will only be a problem. Late modernist buildings have the same goal to be a rational, democratic and modern shell for the content, that is the people living there. Unfortunately high rise building blocks are not better liked than other buildings and people are usually not more spiritual there than anywhere else.

Instead of squeezing the content into a pre-decided form, aesthetical practices involve a certain amount of playing around with the material world and letting the content appear out of that.

This has also been proved to be a useful method in research. The artefact in itself embodies knowledge [8] and can work as a catalyst of ideas or mediator of knowledge in a research project. Harvard [6] describes how project activities that are materialised through artefacts are remembered and thus influencing the development of the project. People that are trained in design “listen to” artefacts which then become statements in a discussion.

Lindquist and Westerlund [11] describe how they use prototypes, probes and mock-ups in a participatory design project. The artefacts had several different functions: informing the research team, facilitating reflection in action, feeding the design process, to construct shared understanding, and to create shared intentions.

Brainball is a game, an artpiece and a research project in human-computer interaction. It was developed as an experiment in multidisciplinary work by a team consisting of designers, artists and computer scientists. Brainball reads your

brain activity and the goal of the game is to relax more than your competitor. Brainball has been used worldwide as an example of interaction design that is not based on intention and fast reactions. It challenges the norm of computer based games, of whether it is possible to compete and relax at the same time and the role of design in research. Brainball could not be thought out in advance and it is most of all an experience. One of the conclusions of the project is that some research issues benefit from being materialised in a physical artefact and that practical aesthetical knowledge is important there. [9]



Fig 2. Building Brainball

The thesis in this paper is that aesthetical practices have the possibility to embody and materialize issues that previously have not been raised. By doing so, they can point at ideas or solutions in ways that are different from textual or verbal analyses, especially since the nonverbal communication in an artefact might be difficult to discuss or present in a verbal form. A piece of art can be magnificent to experience and be a milestone in art history and still reject analysis or slip away from being described with words. This is one of the great problems of research in art and design. What role shall the artefact have and what role the text?

To give form

In Swedish we have a word called “gestaltning” which describes the work of giving form. It is the same as the German “gestaltung” but lacks a correspondent in English. It means (roughly) “to give form” but also to make a meaningful whole out of disparate elements. When we design for example a telephone we “give form” not only to loudspeakers and cables, but to the idea of telephoning. When the telephone was new it was not self-evident what this brand new activity would look like. The first telephone by Ericsson from 1880 looks like a small cotton reel on a stand. The next version was a highly ornamented and large, wall mounted piece of machinery suitable for the well-off home or office.

The giving of form is an active process and implies that there is something there that takes form. This process can be viewed as interplay between this basic but vague vision and the contextual restraints such as time, material, production, market, personal preferences etc. [14] Something is expressed through the forms that meet our senses and mind. The product then becomes a sign for a number of denotative and connotative meanings that the users actively construct. To what extend the

designer is aware of those meanings is an open question and might vary from case to case.

Gestaltning, just as aesthetic knowledge, is closely allied to the experience and use of the artefact. Part of such competence is to understand the context and history of the aesthetic references of the artefact and the context of its use. But, there might be other, references on an ideological level that the designer is not aware of.

“Gestaltning” is also a concept in art, film and theatre, but unlike design it is not used to describe planning processes in general. “Gestaltning” always refers to a material end product, whether it is a theatre play or a painting.

It ain't got a thing if it ain't got that swing

Aesthetics is central in “Gestaltning” and a basic part of the designer's professional knowledge. The aesthetic knowledge is based on long and deep intellectual as well as practical knowledge of the subject, and a “repertoire” [12] of similar problems and enquiries. But the knowledge differs from scientific knowledge in that it is not verbal or explicit but mainly tacit, implicit and based in the activity itself. Several professions are based on such situated knowledge such as nurses judging patients, architects that design, musicians, actors etc. These professions have in common that they are not taught by explaining how to do but by showing how it's done. Aesthetic knowledge is very difficult to describe in words and is a form a tacit knowledge comparable to other craft or action-based skills. To exemplify what an aesthetic skill is we can make an analogy with music. Most people enjoy listening to music and playing instruments, but some people have professional training in this and are more skilled than the layman, both in playing and in judging music. Music is universal and a fundamental human activity and animals don't play (even if some of them sing). Music comes in a large variety and in many styles that have their own set of rules and context. You can't compare a piece by Bach with a song by Beatles, especially not making judgements about value like: Bach is better than Beatles or music “should,” sound this or that way. But it is still possible to say if something is wrong, false, doesn't swing, in the wrong key, but such judgement can only be done in a certain context.

The term design has a general meaning and refers to a basic human activity of making artefacts, but that does not mean that everybody is equally good at practical aesthetics, just as everybody is not equally good at playing music. On the other hand only you can decide what music you like to listen to, what clothes you like to wear and what you tools you like to work with. The use and preferences of an artefact is always situated, contextual and personal.[7]

Two types of design activities

In the above discussion we can see two types of design activities emerge.

The first is the *design process* which refers to construction and problem-solving in general. This is what Herbert Simon refers to in his very broad definition: “*Everyone designs who devises a course of action aimed at changing existing situations into preferred ones.*” [13] Design as process refers to the general, inherent human ability to conceive, create and change the future - something we all share. In this respect everything created by human beings as part of a planning process is design, including an academic paper, a piece of music or a service.

The second activity, the *Design practice* refers to a professional activity, which is to decide the properties and shape of a physical artefact. People trained in this practice are experts in solving complex problems and to visualise and materialise the result aimed at a certain end user in a technical

and economical context. Their main competence is in the field of *practical aesthetics*. They have the knowledge to give form to abstract ideas, to find appropriate metaphors and to make artefacts attractive and usable.

But the word design can also refer to a noun, a thing. This is *design as product* and refers to the *physical form* of an artefact, that is; the end result and object of the design process or design profession. Judy Attfield [1] describes design as ‘things with an attitude’ - created with a specific end in view.

CONCLUSION

There are a number of conclusions to be drawn from this discussion. One is that we need to develop a more explicit language when we describe the different activities and outputs of design.

One such distinction should be made between design as a general activity and the design professions. While design as a process can be seen as a general human activity and a useful method in research, design as profession relies on a deep familiarity of aesthetic practice. A knowledge for *gestaltning* of artefacts for human use as well as for research.

Another conclusion is that design practitioners are useful for materialising abstract ideas and that it may be important to have a competence for *gestaltning* in a research project. Something important happens when an idea is transformed to concrete artefacts that can be experienced. The experience and use gives a dimension to the research issue that is beyond merely observation and reflection. Some issues need a material embodiment to be raised and discussed. In a commercial context the strong reality forming ability becomes a way to maintain norms, in a research context it may be a way to challenge them.

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