

TEACHING DRIFTING IN DESIGN: THE TRANSITION FROM ANALYSIS TO CONCEPT

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ABSTRACT:

This paper studies the transition from research to concept in design through examples from some well-known designers and design researchers. It shows that this “drifting,” as we call it, takes several forms in design. The range is from cases in which the drift is kept in check by methodological choices and aims, to cases in which the drift is seen as free form. We describe two successful classes in which we have been teaching drifting, one for Master’s students in Hong Kong, another for PhD students in Denmark. In discussion, we contrast the concept of drifting to the notions of radical innovation and rationalistic process models of design, proposing that these misspecify the diversity of what actually happens in design during the transition this paper focuses on.

Keywords: Design – design research – drifting – research - analysis – concept design

1. INTRODUCTION

Creativity and imagination is at the heart of any good science, the role of it is however most often understated and typically hidden behind techniques and schemes of logic. In design at the other hand creativity and imagination is the hallmark both in doing and in communication, which in return has a tendency to undermine the credibility of the discipline. Reasons for writing the paper is to unravel the things that designers just do and call analysis, but are mostly unaware of. We are exploring the overlaps and specificities between classical ideas of science and design research (Bang et al. 2012; Koskinen et al. 2011). Whereas a lot of work has gone into understanding the entanglement of theory and practice in design research, what design researchers do when they talk about hypothesizing, experimenting and evaluating there is as of yet little account of what it means to analyze in

context of design and design research. The work of Nelson and Stolterman claims that “design is intentional change (in an unpredictable world)” (Nelson and Stolterman 2003). What is the role and value of analysis in this context that clearly situates design into the realm of world-making disciplines, not analytic?

We believe that the answer lies in the details. Data gathering, analysis and concept design are not only neutral research activities, but also acts of scoping and framing design and research. In this paper we provide a framework for analysis based on how data gathering and design is interrelated and practiced in design and design research, and the types of results such analysis it is capable of delivering. We propose a model for understanding how designers drift from data and analysis to concepts, and illustrate how it helps to understand the ways in which experienced designers work through this phase of their work. This paper has roots in the classroom, and we explain cases we have used to illustrate students how they can do this drift. We prefer to talk about “drifting” instead of using more typical concepts like leaping and reframing that (Verganti 2009; Dorst 2015), for us as active teachers in the classroom, paint romantic a picture of design as a creative occupation and by ignoring many other ways in which designers drift from describing reality to a new concept (Branzi 2010; Krogh et al. 2015).

2. THERE IS MORE TO DESIGN THAN ANALYSIS OF DATA

Design is often described as a solution-oriented discipline – a synthesizing discipline. However, experienced practice in design research tells and shows that analysis and synthesis are not two distinct separable modes of working. For them, design issues and subjects are mostly wicked and ill defined (Rittel and Webber 2973). For others, design is a process of seeking alternative ways of seeing the world rather than problem-solving (Dunne and Raby 2013). Such challenges invite for rapid oscillations between analysis and synthesis, framing and re-framing, iterative modes of inquiry involving processes of synthesis as modes of inquiring and modes of analysis trying to identify potential connections or logics in a metaphorical sense.

In the context of change design is supposed to bring about, research is a useful component in that it tells where the problems lie, and helps to analyze their structure. It does not, however, tell about where the solutions to the problem lie. This remains a design task. In their book about interaction design, Hallnäs and Redström describe the demands of these two activities in terms of a hermeneutic gap (a gap in understanding):

The hermeneutical gap is the gap between what is actually given and what we actually design; the gap that exists between our present understanding of a given design variable and the interpretation given by the design itself, a gap between analysis and synthesis, a gap between the actual users of given things and the ‘user’ we define within the design process, a gap between the ‘user’ we define and an actual user in being. It is a gap that opens up as we draw the different design circles. It is a hermeneutical gap since it is bridged through interpretations in a process of designing; the very meaning of design is that this gap is bridged through an interpretative act in terms of a definition. This is a logical gap, but there is also a historical dimension here; a gap

between what in fact is given here and now and the change of meaning that the design will bring about. (Hallnäs and Redström 2006: p. 71)

Occasionally we also do find cultures of analysis brought in from other fields of research and deployed in design as indicated by Koskinen (2014), who has described four cultures of analysis typical to design research: statistical, interpretive, explicative, and artistic.

The problem with all these cultures is that they give design researchers tools for understanding the world, but do not answer the demands to be imaginative. The question we explore in this paper is what kinds of methods designers use to generate results that inspire design, and find out cases that illustrate how some of the leading designers drift from desk research, observations, interviews, and audiovisual data to concepts that are detailed enough and enticing to work as basis for design work. Our belief is that rather than deploying an academically cultivated filter upon a well-defined set of data, design analysis can be characterized as a value-based perspective. Design theories may take many forms different to classical scientific theories. They may be dogmas for ways of working or manifestos (like the famous principles of Dieter Rams) pointing out qualities and criteria of outmost preference. The data gathered and the analysis deployed articulates the criteria that are provided priority.

3. DRIFTING FROM REALITY TO CONCEPT

For this paper, we collected a roster of cases from literature telling how some designers and design researchers do the drifting we described above. In more analytical terms, we can map some of these drifts into Table 1. In its horizontal axis are the methodological alternatives described earlier by Koskinen and his co-writers (2011), but decomposes these categories by design process.

The problem with their book is its analytical tactic, which leaves open the question of how the methodological takes relate to each other. The picture it may be taken to suggest indirectly that methodologies ought to be pure. For instance, to be consistent, lab researchers should be logical, produce knowledge with objective methods, and aim at producing general knowledge. Yet, if we look at designers and design researchers, this picture is only partially true. Even some of the writers of the book drift between methods when they proceed from analysis to design and back to evaluation. Take the example of Stephan Wensveen (2004), who did cultural probes for his process of designing alarm clocks; who sketched his alarm clock like any designer would; and evaluated his findings with sophisticated trigonometric models in laboratory-like conditions. In terms of Table 1, his work started from showroom-like art-inspired methodologies, and ended up in the lab-like world of logical constructs. Using the notation of Table 1, his drift was {research: 2,3 > design: 4,5 > evaluation: 7-9}

		<i>Methodology</i>		
		Showroom	Field	Lab
Process	Research	1. Provocative	4. Interpretive	7. Logical
	Analysis	2. Subjective	5. Contextual	8. Objective
	Evaluation	3. Specific	6. Relevant	9. General

Table 1. Drifts from reality to concept

As our quick analysis of Wensveen's study shows, Table 1 is to be understood as the mapping of both data building and design acts, but it also has a dynamic aspect: it can be turned into a descriptive tool of how drifting may happen. Vertically, it maps some of the main methodological alternatives at designers' disposal. Horizontally it spans a spectrum ranging from creative to measurable objectives and vertically it depicts applicability of criteria. The nine keywords exemplify the characteristics of the results. The dotted field tells of the data of the data build or at hand, whereas the diagonal-striped tells the characteristics of the design activity. In total the model depicts the space of analysis. The model allows us to assess the range of the analysis and how it may be accountable. In the following we describe how we have used the model to teach drifting to students.

4. MINIMAL DRIFTS: CONSISTENCY AS A VIRTUE

The first group of researchers tries to keep design in one methodologically consistent segment. There are writers who give priority to research analysis and propose a tight connection between research analysis and design analysis. Perhaps the boldest statement comes from Eindhoven, where Kees Overbeeke's research group revolutionized the tangible part of interaction design. Overbeeke, trained in experimental psychology, taught his students into a mixture of creative and experimental design research. At bottom were theories from J. J. Gibson's ecological psychology, which was evident in their basic understanding of research as an experimental and mathematical activity and designs as experimental pieces built to generate knowledge that would later serve as a foundation of design.

Kees Overbeeke et al. on design as experimental research:

Design research resembles research in, e.g., psychology in that it has a minimum of controls built in when exploring the solution when testing variations of solutions. Therefore we wrote above: "we have kept the devices simple, pure and with resembling aesthetic appearance." This makes it possible, to a certain degree, to isolate and even manipulate systematically critical variables. What

is of the utmost importance, we think, when testing the variations, is that the user's actions on the prototype are recorded... In the future, we will use these data to construct mathematical models of actual interaction. (Overbeeke et al. 2006: p. 64-65) Drift: {r: 2-4; d: 4,5; e: 7-9}

This is probably the boldest statement in literature for turning design into science. Other researchers in the Dutch research community in Delft and Eindhoven took a more moderate approach, but still have accepted the premise that design can be seen as science, or at least proto-science. For Pieter Jan Stappers (2006), for example, design is a process that creates a physical hypothesis.

The construction not only builds on scientific sources, but also on design, which functions as an impurity of sorts in the hypothesis generation process. Caroline Hummels has been more skeptical about the idea of generating mathematical formulas for design since her PhD thesis.

Caroline Hummels on contextual elements in design:

As designing has become essentially contextual, scientific work and results should also be contextual, i.e., lead to conditional laws instead of general laws. In my opinion, the classical highly controlled experiment, which tries to uncover 'the truth' through falsification, usually kills both context dependency (looking for general rules) and subtlety (control and repeatability). Therefore, we need to expand our research methods: incorporate the context in an experiment and allow for subtlety. (Hummels 2000: 1.27) Drift: {r: 3, 5-6; d: 2-3, 5-6; e: 7-9}

As we see, the logic is scientific: the structure of design and its relevant variables need to have a justification in research. This priority is not questioned, even though Hummels gets close to suggesting that context is indeed more important than the formula. Judging by her thesis, her heart was in the contextual side.

5. DRIFTING WITH COLLAGES AND METAPHORS

Instead of trying to push design into a logical model, several designers and researchers radicalize the hermeneutic gap. Usually, they build on metaphors or collages that help them to create a bridge from research to concept by jumping over the hermeneutic gap.

Barbara Radice describes Ettore Sotsass's design method through the metaphor of the weather forecast. As Radice writes, at the center of Sotsass's analysis was a social scenario written in social and psychological terms. He then went on to imagine designs he placed in this scenario, and finally arrived at a design hypothesis through a series of what if-questions.

Ettore Sotsass's design analysis:

Before designing a product, Ettore makes a kind of mental map, and sometimes also a written one, of the problem's cultural terms, with the approach more of a socio-psychologist than of a designer. From this he derives a sort of weather forecast of the situation, while trying to

understand where, and how, his design will end up when it when it enters people's houses or offices, with its weight, its color, its density, its support functions, etc., always thoroughly and almost obsessively aware that beauty and utility are a function of an object's capacity to represent a particular vision of the world, as up-to-date and efficient as possible vis-à-vis contemporaneity. (Radice 1993: p. 107) Drift: {r: 2,5-6; d: 2, 4,5; e: ∅}

For Sotsass, then, designs are elaborations of the social scenario at the bottom of the analysis. Once he had created a social scenario, it became the background that gave direction to design. The rigor of the method was partly in this structure, partly in its direction. It identified a set of (social) variables, and gave them a foundational status in the design process. It also gave an order to Sotsass's design process: it told him which variables to start with, and when he had this structure at place, he was able to go to fix the details. The spirit of the method is closer to literature than science – maybe thing being a nod to Sotsass's contacts with the Beat generation in California.

The weather forecast metaphor may illustrate well the general shape of design analysis, but does not tell much about how design variables are clustered and related to each other. Again, we face a scarcity of literature, but a tiny set of recent writing suggests that a typical technique is collage in some form. A recent German catalogue explains Alessandro Mendini's favorite design analysis in terms of collage, using the example of his *Poltrona di Proust* as illustration.¹ Tells a recent catalogue of his work:

Alessandro Mendini's analysis:

Contemplation of the Surrealist "exquisite corps" method had an equal degree of influence on infinite furniture as the principle of collage Mendini had previously used in his re-design furniture and Poltrona di Proust, employed as a formal means of expression in Cubism. The aesthetics of collage enabled Mendini to amalgamate the most diverse objects, things, and values with contemporary impressions and fragments of experience to create a new aesthetic object ad a new aesthetic postulate. The conscious use of all kinds of materials and the contrast of everyday set pieces with artistic works, which are well known from the material pictures of one Alberto Burri, tapped an aesthetic that connected the refined with the banal and the stylish with the kitsch. (Mendini et al. 2012: p. 65) Drift: {d: 2-3, 4-5; design: 1-3, 6; e: ∅}

A metaphor-based technique is favored by many contemporary designers, like Jerszy Seymour with his action painting style experiments in interiors and Tobias Rehberger's collaboration with the furniture company Artek in Venice Biennale and Logomo Cafe in Turku, Finland; Martino Gamper's designs inspired by Arte Povera and New Realism; or Kees Dorst's method of frame creation (Gamper 2007; Dorst 2015). These designs result from putting a design task by placing it in a new context and that way giving it a fresh, surprising face. Here, collages are used to coordinate several variables of interest to design together into a mixture that puts together research analysis, but also juxtaposes it with aesthetic analysis as well as technical, functional and product requirement analysis. The result is

¹ *Poltrona di Proust Monumentale* was a massively sized version of the original collage; its size reflects the dream world of Surrealism, and well illustrates how design can not only be a collage, but also a collage of collages: a banal armchair morphed into something else with pointillism, and later re-morphed into a vast size which gave it a Surrealist feeling.

simultaneously analytic and synthetic, but it also simultaneously brings together research and design analyses.

6. DRIFT AS A FREE SPACE

There are researchers who open up the space completely, and pay little attention to the rules of consistency. The most radical approaches to design analysis conflates these research analysis and design analysis up to the point in which it is difficult to talk about analysis in any strict sense of the term. One of the leading interaction designers Bill Gaver described his research analysis (my term) in a talk in Helsinki in 2002 as “kind of gossip” and his design analysis as a series of steps designed to lead to interesting aesthetic rather than epistemic outcomes.

Bill Gaver’s design analysis in 2002:

Tactics for using returns to inspire designs

(a) Find an idiosyncratic detail. Look for seemingly insignificant statements or images.

(b) Exaggerate it. Turn interest into obsession, preference to love, and dislike to terror.

(c) Design for it. Imagine devices and systems to serve as props for the stories you tell.

(d) Find an artefact or location.

Deny its original meaning. What else might it be?

Add an aerial. What is it?

Juxtapose it with another. What if they communicate?

(Gaver 2002: p. slides 78-79] Drift: {d: 1-3; d: 1, 4-6, e: 2-3}

If we go through this credo step by step, we see first of all that there is a procedure, which has a direction. Its core is surprise in Step (a), exaggeration in the manner of Henry Moore or Giacometti in Step (b), and building the story world around it in Step (c). The remaining two steps are designed to create a rich layer of meaning around the evolving designs. *The Presence project* (2001), in which Gaver developed his ideas, gives some leeway into these references. first two steps were in debt to the Situationists and their Surrealist predecessors; the inspiration for the last two steps came also from artists like Cindy Sherman and John Baldessari.

In their recent book *Speculative Everything* Anthony Dunne and Fioba Raby (2013), who coined the term critical design about 15 years earlier likened design to literature. *Speculative Everything* has a chapter about their technique. The chapter tells how they see their work in the tradition of thought experiments, much like in analytical philosophy. When they get deeper in their chapter, they describe three forms of thought experiments, what if statements that help to create alternative scenarios, counterfactuals that question the past, and *reductio ad absurdum*, familiar from logic.

As far as we can say, *reductio ad absurdum* is their main critical device, and for this reason, this procedure merits a closer look. In logic, *reductio ad absurdum* is a way to prove a statement wrong by showing that it leads logically to contradictory statements. If you can logically derive P from the initial statement, and you can logically derive non-P from the same statement, the statement must be wrong. In critical design, it translates to designs that treat some prevailing belief as true, and push it to its extremes to show that it indeed has contradictions in its core. For example, a concepts like energy-harvesting in domestic spaces can be shown to lead to ridiculous extremes by imagining tables that eat mice to keep the table running.

The logic is familiar from contemporary art, where a typical art piece functions by puncturing the thought balloons of this and that. The exemplary case is Marcel Duchamp and his small collection of ready-mades, but critical design is equally in debt to Hans Haacke's political art and Marcel Broodthaers's vision of science, among many others. The main risk is that this tactic is all too easy at the outset, but demanding at bottom. It is easy to generate creative concepts by drawing moustaches on Mona Lisa, as Duchamp did in one of his "assisted" ready-mades. The trick is to know which changes are interesting enough to make a point. Perhaps the best teacher is Duchamp, who did only slightly more than ten ready-mades in his life. For him, these pieces were carefully thought-out proofs showing that some premise in the art world was wrong, including the idea that only things touched by an artist can be art, material is more important than concept, or a gallery space has to respect art works. His interventions were like mathematical proofs. Most mathematicians never prove anything new, and even the best of them call three major proofs a life's work.

7. TEACHING DRIFTING IN THE CLASSROOM

We have been teaching drifting in two design research classrooms, one at the MA level, and another at PhD level. At MA level, the method has been taught in "Research and Analysis for Design," a big research class in Hong Kong given to three groups of students, one in product design, another in interaction, and a third for more mature part-time students specializing in strategy. The number of students is about 70-80. At PhD level, the concept has been driving education in Kolding and Aarhus in Denmark, where it has been taught for PhD students in the Jutland region or Denmark. The number of students is about 15.

In the Hong Kong class, which aims to give students experience in how to do research to improve their design work, drifting has been taught through several examples that have been mentioned in this paper (IP08 2009). The class begins with a four-week research phase in which students define and explore a topic first with unobtrusive methods and fieldwork, and then through projective and immersive methods. When soaked in material, the next phase of the class introduces them to concept design. The methods introduced at this stage fall in two classes: analysis methods following, and concept design methods, as described in this paper. This phase of the class helps students to identify a problem, define its the key

variables, and organize these into a design program. The outcome of the class is typically a CAD model of a concept embedded into a video that described the design process.

In Denmark, the PhD program is for students who do research-through-design, or constructive design research, in the terminology of the class (Bang et al. 2012; Kroght et al. 2015). Students have to participate in three four-day seminars that have three themes: the first focuses on hypothesis, the second thinks a piece of design as an experiment, while the third focuses on evaluation. Each four-day seminar starts with an opening day of lectures introducing the topic and continues to the second day, which reviews homework (students have to tell how they develop a hypothesis, for instance). The third day is for writing out the second day, and the fourth day closes with reviewing the results, and also has a closing keynote. All writing is finished during the seminar; late submissions are not accepted. Students have to participate in this three-seminar series once to get full credits for their PhD studies. Pedagogically the seminar builds on design, but its foundation is in the three-fold structure of hypothesis-experiment-evaluation that forms the current heart of the education in PhD work in Jutland in design.

Both classes stress that the path from research to design is a form of drifting, and that there is no foolproof path that should be followed. Rather, there are many paths, and solid design outcomes may take several routes. The gist of both classes is teaching that more important than a process is that the students need to go through several hypotheses to rule out some as unfruitful, and they have to be able to describe the process for their peers and teachers. Through this, the pedagogical approach of these classes shifts design from discourses focusing on creativity, analysis, or process into discourses of validity and intersubjectivity.

In yet broader terms, these two classes see design research as an open-ended activity that has to be kept open. One of the things we have tried to achieve in the classroom is turning students critical towards any model of design that puts it into a strict process model that can be optimized into a problem-solving method. The history of rationalistic models, quite simply, shows that they do not work in a world-making discipline that finds its ultimate justification in imagining new things. We have also wanted to avoid turning design into too much drama by stressing that the path from research to concept (and then detail design) is a drift rather than a heroic leap without reducing it into industrial stereotypes of incremental and radical innovations. In our teaching, the concept of drifting in no way rules out concepts that departs radically from the world of existing products, spaces or services.

8. DISCUSSION

This paper has described how some designers and some design researchers drift from research to concept and in so doing close the hermeneutic gap of Hallnäs and Redström (2006), and how we have taught this drift. Although there is a massive literature on creativity and concept design, this phase is not a popular topic in research. Most work described company processes rather than gives detailed descriptions of what happens at this

phase of design. The literature also is dominated with claims that typically have roots outside the design studio in art, business (Verganti 2009), or computer science (and even mathematic, as in Rittel and Webber 1973). It tends to paint an overly dramatic picture of design as a heroic discipline leading to dramatically new ways of seeing the world, or as a rationalistic problem-solving exercise.

We believe that these pictures are partially right, they are only that: partial descriptions of what goes on in design. Our proposal is to see the transition from research to concept as a drift rather than a jump or process that can be described formally and optimized. We have described a few examples of the work of some *maestros* of design and design research, and classified them initially into three types of transition. Our main warning for readers is that this classification should not be taken as exhaustive; rather, it is our way of showing that there is a lot of diversity and freedom in the transition that is usually hidden underneath concepts like analysis and concept design. To put it bluntly, they misspecify what happens in design, at least when it is free from the strictures of corporations and their need for predicable processes and hierarchies.

We gave two examples of how we have been teaching drifting. The first example came from a MA-level research class in Hong Kong, the second from a PhD level class in Denmark. We have revamped the classes using our emerging pedagogical concept, and have improved both classes significantly. We suspect that the main reason is that we have acknowledged the diversity of drifting and shown that to our students who, like their forerunners in design, have been skeptical about both the heroic and the rationalistic picture of design.

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