

Design Research Foundations

Peter Gall Krogh
Ilpo Koskinen

Drifting by Intention

Four Epistemic Traditions from within
Constructive Design Research

 Springer

Design Research Foundations

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Four Epistemic Traditions from within
Constructive Design Research



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Peter Gall Krogh
Department of Engineering
Socio-Technical design
Aarhus University
Aarhus, Denmark

Ilpo Koskinen
Design Next
University of New South Wales
Sydney, NSW, Australia

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Preface

The term constructive design research captures what happens to design when it shifts from building products, services, jewelry, interactive systems, textiles, fashion objects, etc. to creating knowledge. This book takes a look at what happens in constructive design research from within and tells how we understand “drifting” as a native and key characteristic of this form of research. We believe our analysis is also useful for design practitioners.

For us, drifting is what every designer does in every project – and what every design researcher does in every research project. By drifting, we mean those actions that take design away from its original brief or question and lead to a result that was not anticipated in the beginning. We talk about drifting as a conscious process that happens intentionally and depends on certain epistemology. One designer drifts in the studio, another in critiques, a third in the world of simulations, a fourth through randomization, and a fifth using many different tactics. Every designer – and design researcher – drifts intentionally and methodically. This process can sometimes lead to radical changes, but it does not have to. In fact, we argue that design literature needs a more modest and nuanced description of design that does not reduce design into a dialogue between problems and solutions that spur reframing, blue-sky thinking, radical and disruptive innovations, or counterintuitive findings. It may be, but these heroic moments are rare and, as we try to show, should not be turned into a standard expectation or a norm. We need a more flexible way to understand those shifts that characterize design and design research, and drifting is our word for them.

Before this gets too philosophical, it is perhaps a good idea to give an example.

Odo Fioravanti is an Italian designer who is best known for his chairs, so many on the market by now that his friends call him Mr. Chairman. In December 2016, he gave a talk about his work in Hong Kong, describing two-dozen design pieces he has done and detailing the usual material innovations behind them. After his talk, a member of the audience challenged him by asking whether he is aware of the mathematical and scientific tools available to him at all. Rather than being agitated by the question, which was meant to show the superiority of science and engineering vis-à-vis designers, Fioravanti raised his head, gave a friendly smile to the audience, and responded calmly: “Well, I studied mechanical engineer and I know its methods.

Of course I can do finite elements, for instance. However, experience is much more important.”

Fioravente’s response well captured two cultures that characterize design. For a master of his trade like him, experience is one way to design. While the methodic path would lead to modeling chairs mathematically, the experience-based path would lead him to a close study of materials, ergonomics, joinery, form language, molding, and attachments in existing chairs. He does not say that science is unimportant, but he acknowledges other ways of knowing. For him, the true question is how knowledge works in design practice, how it is generated, and how it can be recovered for the same practice. These are the skills any designer deals with in daily work – the important reason why studio-based work in both education and research is key to design and constructive forms of design research. There is knowledge in practice, even though it is different from those scientific discourses that usually dominate debates in design research and find their opponents from practitioners.

The exchange in Hong Kong is wanting in one respect, however. It captures two ways of understanding knowledge. This book argues in contrast that there are at least two more ways to understand knowledge, its implications to drifting, and how these implications shape the shift from design practice to a knowledge-based discipline.

Our way of analyzing this shift is epistemological. In philosophy, epistemology means the study of knowledge. It probes what are the conditions under which we can trust some statement and take it to be true (see, for instance, Feldman 2003). As it is easy to imagine, the answers to this age-old question have been far and between. Philosophers like Plato have postulated a world of independent, invisible ideas that are reflected in reality. This approach, well-rooted in design’s concept of forms as signs for use and meaning, turns research into a search of these ideas. Rationalists like Rene Descartes have denied the possibility of knowing the world and trust our logical abilities – the only thing we know for sure is that it is us who are thinking, which means that knowledge must be sought from our own thinking and not from the objects that we surround our self with. Empirical philosophers like John Locke and David Hume and logical empiricists like Otto Neurath and Rudolf Carnap on their part see senses as a source of knowledge (Locke famously saw humans as *tabula rasa*) and usually analyze how we can know whether sense datum can be trusted. For example, how do we know whether what we see is not a dream or a hallucination? In an attempt to reconcile these two, Immanuel Kant proposed that knowledge lies in universal categories of the mind, a view that later gave birth to both phenomenology and cognitive science. Phenomenologists like Martin Heidegger and Hans-Georg Gadamer go beyond epistemology to study how is it possible to know anything at all, while others follow Ludwig Wittgenstein’s late philosophy and analyze how knowledge depends on our uses of language and a “form of life” behind language.

The most recent versions of epistemology, however, have tended to be historical and empirical. They are, for instance, studies of how science sometimes begins to treat some facts as paradigmatic and how these untouchable truths are sometimes revolutionized (Kuhn 1962) or how facts are manufactured in laboratories and

research instituted with ethnographic tools (Latour and Woolgar 1979; Lynch 1993; Collins 1985). Many of these arguments have followers in design communities as well – all the way from the implicit Neoplatonism of the Bauhaus (as Otl Aicher 2009 describes the legacy of the Bauhaus) to Johan Redström's (2017) recent Kuhnian-inspired interpretation of design.

Our preferred analysis would have started from existing epistemological writing in design and engineering, but we did not find a lot (e.g., see Schmid 2018). Those few sources we managed to find (see Mitcham 1986 and van Fraassen et al. 1991) main point out that epistemology in the world-making disciplines is heavily embedded in culture and society at large. As Mitcham, for example, points out, since everything man-made, computers are embodiments of human values and as such give a material form to ethical problems that should be studied epistemologically. His analysis is useful and well in line with how we see design from within, but he does not, however, give us a method for explicating these values.

Given the paucity of literature, our take on epistemology has been inspired by the empirical studies of science referred to above, but our method is explication rather than ethnographic. We study some of the key texts in literature and explicate their understanding of knowledge – that is, we try to capture their implicit epistemology. Then we turn our attention to constructive design research as such, asking how these interpretations work in doctoral level research. We shall not argue that epistemology somehow determines how design research is done (or, even worse, how it should be done) but argue that seeing it as an epistemic practice helps to understand it better. An epistemology from within, as we call it, tells researchers how to treat previous research and how to select methods and methodologies. It also tells them the nuts and bolts of research: which arguments are strong enough to change the direction of research, how to experiment, how to evaluate their findings, and how to communicate the outcomes. It also gives a tool that helps to open up implicit universal assumptions in disciplines of design and clarifies the relationship between some of the debates that have shaped up first design research and then design itself over the last two and a half decades.

The main contribution of this book is the concept of drifting and the insights it provides for a better understanding of how design researchers approach their craft. We believe that if we gain a better understanding of epistemology in design as something that comes from within the discipline, it can become a useful addition to the discipline. Some will argue that design has become a research discipline on its own rights as it offers particular ways of approaching research and development challenges and deliver knowledge that is particularly relevant and significant to its own community. Others will rightfully state that design and constructive design research borrows heavily, theoretically, from other disciplines. However, this accounts for most other disciplines too. Being a research discipline on its own rights is not a matter of crossing a well-defined finish line but a matter of maturity. Looking to the material, most prominently the corpus of PhD dissertations that we analyze, constructive design research by now has well-established publication fora and delivered unique valued and respected contributions to research literature in

management, engineering, policy-making, human computer interaction, and many others. This, at least, tells of a maturing field.

Our broader aim is to open up a new way in which designers can see their work. Most things we say are already known; what we provide is a coherent interpretation of arguments that exist in literature and a vocabulary for analyzing them. The aim is clarification; the method is an explication of arguments that already exists. If this clarification helps design researchers to understand better the foundations of their work, it will, we believe, provide them the freedom they need to navigate our increasingly academic discipline.

Aarhus, Denmark
Sydney, Australia
June 2019

Peter Gall Krogh
Ilpo Koskinen

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This book and its thoughts have been in the making for quite a few years. During these years, the ideas changed and matured. The way of maturation as can be traced in our evolving presentations and coursework was carried out in diverse design programs. Iterating ideas and versions of models, exposing them for discussion, has, to us, been an essential part of developing thinking behind this book. There are many people to thank for their challenging discussions and for their generosity to allow yet half-baked thoughts live in discussions. It is hard to direct well-measured amounts of thanks to them. Not only experiences from presentations and academic discussions but also casual hallway chats have at times led to thoughts later to be discussed between the authors; some have found their way into the book. We are grateful to all these people. However, we also recognize that the efforts on this matter are prone to error. We apologize in advance to anyone who would have desired more credit. Having stated this, there is a set of people we would like specifically to extend our thanks to beyond academic credits.

In 2011, when Peter Gall Krogh was professor at Aarhus School of Architecture in Jutland, Denmark, he initiated a series of 3-week long courses with three Danish colleagues of his. These courses were planned at helping PhD students to comfortably pursue new knowledge during their doctoral studies by applying their design competences. We are grateful to the management of Aarhus School of Architecture and Kolding School of Design for supporting these courses, and for the generous sponsoring by the Danish Ministry of Culture. The courses were developed in collaboration with Thomas Markussen, Anne Louise Bang who at that time was in employed at Kolding School of Design, and Martin Ludvigsen, one of the most talented design researchers we have ever seen who was also a colleague at Aarhus School of Architecture. As authors of the book, we are grateful to their valuable contributions to the early thoughts, also expressed in coauthored papers, that are key to Chaps. 4, 5, and 6. Without these work and contributions, the book would have been a very different and less operational.

Above all, we are indebted to the more than 40 doctoral individual students from all over Europe. They had the courage to expose their research to early versions of models and methods presented in this book. They believed that their research might

improve from taking part in the courses. Their uses and reappropriations of our early versions of ideas helped us rephrase the models and concepts presented in the book.

In 2010, Ilpo Koskinen was visiting professor at Aarhus School of Architecture while writing parts of the manuscript for *Design Research Through Practice: From the Lab, Field, and Showroom*. Some of the formative ideas of the current book had their origins in that visit. We would also like to thank two of the coauthors of *Design Research Through Practice*, Johan Redström and Stephan Wensveen, who contributed lectures to the doctoral courses in Jutland and later discussed ideas of the book with the first author in detail.

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Aarhus and Sydney
February 2020

Contents

1 Drifting	1
1.1 Drifting in Profession and Research	4
1.2 Constructive Design Research	5
1.3 Drifting in Design and in Constructive Design Research	7
1.4 New Experimentalism as a Lens	9
1.5 Explicating Drifting	10
1.6 On Terminology and the Structure of the Book	12
2 Shift to Knowledge	15
2.1 Knowledge as Method and as Aesthetic	16
2.2 Artifacts as Knowledge	18
2.3 Frameworks and Programs: Discourse as Knowledge	21
2.4 Knowledge as Participation: How Users Motivate Drifting	22
2.5 What to Expect From Constructive Design Research: Re-Articulation	25
2.6 Sum Up	27
3 Drifting in Four Epistemic Traditions	29
3.1 Experiential Tradition and Drifting	30
3.2 Methodic Tradition and Drifting	34
3.3 Programmatic Tradition and Drifting	36
3.4 Dialectic Tradition and Drifting	40
3.5 Drifting, Accountability, and Context: The Art of Being Robust	44
4 Design Hypothesis: Knowledge-Relevance Model	47
4.1 Mapping Design Practice in Relation to Knowledge	48
4.2 The Knowledge-Relevance (K-R) Model	50
4.3 Design Hypothesis in the Four Epistemic Traditions	53
4.3.1 Hypothesis in the Experiential Tradition	53
4.3.2 Hypothesis in Methodic Epistemic Tradition	54

4.3.3	Hypotheses in Programmatic Epistemic Tradition	55
4.3.4	Hypothesis Emerging in Dialectic	56
4.4	Hypothesis in the Knowledge-Relevance Model	57
5	Ways of Drifting in Design Experiments	59
5.1	Drifting in Constructive Design Research	60
5.2	Drifting Through Design Experiments: Five Methods	61
5.2.1	Accumulative	62
5.2.2	Comparative	63
5.2.3	Expansive	64
5.2.4	Serial	65
5.2.5	Probing	65
5.3	How the Methods Work Over a Design Process	67
5.3.1	Comparative — An Example	67
5.3.2	Accumulative — An Example	68
5.4	What the Typology of Drifting Methods Reveals	69
6	Four Epistemic Traditions of Evaluation	73
6.1	Evaluation in the Experiential Tradition	74
6.2	Evaluation in Methodic Tradition	76
6.3	Evaluation in Programmatic Tradition	77
6.4	Evaluation in Dialectic Tradition	78
6.5	Accountability as Drifting Heuristic	80
7	Crossing the Hermeneutic Gap	83
7.1	Crossing the Hermeneutic Gap	84
7.1.1	Experiential: The Hermeneutic Gap as Creative Space	85
7.1.2	Methodic: Making the Gap Transparent	87
7.1.3	Programmatic Tradition and the Hermeneutic Gap	89
7.2	From Research to Concept	92
8	New Experimentalism	95
8.1	How Knowledge Depends on Experience	96
8.2	Against Method: <i>Methods as Achievements</i>	98
8.3	Design is Stubborn	99
8.4	Discourse is Equally Stubborn	100
8.5	Design Practice, Programs and Discourse in Empathic Design	101
8.6	Experimentation as a Site of Intentional Drifting	104
9	At the Frontiers of Knowledge	107
9.1	Knowledge-Relevance: Talking to Two Audiences	108
9.2	Epistemic Traditions in Their Full Depth	108
9.3	Drifting in Conceptual Scaffoldings	110
9.4	New Experimentalism	112
9.5	Towards Technical Humanism	114
9.6	The Limits of Eurocentricism	116

- 9.7 Constructive Design Research Beyond Europe 118
- 9.8 The Future of Design as a Knowledge-Based Discipline 119
- 10 Corpus** 123
 - 10.1 Primary Corpus 125
 - 10.2 Expanded Corpus..... 126
- Literature**..... 129
- Index**..... 139

Chapter 1

Drifting



In this book, we deal with the epistemology of design. Epistemology is one of the grand terms of philosophy, where it means discourse about knowledge — usually about certainty, whether we can trust our senses, thoughts, and other pieces of knowledge. For us, two design researchers, the concept is more specific. We deal with epistemology in one particular context, constructive design research, in which design artefacts are vehicles of knowledge creation. In our work we have identified four epistemic traditions in constructive design research: (1) *experiential*; (2) *methodic*; (3) *programmatic*; and (4) *dialectic*. These are described in Chap. 3. Our aim is not to contribute to philosophy; our aim is to clarify how knowledge works in constructive design research. Rather than tightening the bridle this book is our attempt to maximize the freedom of research as it happens in constructive design research. The descriptions and methodologies provided in this book is our attempt to give research legitimacy to a cherished design practice we call drifting — however, drifting by intention.

Drifting is typical to design, and cannot be avoided in it. We believe understanding drifting is crucial for understanding design and constructive design research. The concept of drifting also resonates with modest approaches to design rather than what we regard as currently overdramatized concepts like reframing, radical change, design driven innovation and so on.¹ While there are cases in which designers have dramatically redefined product categories, these are exceptions in an industry that mostly creates small improvements, and which equally often recycles old forms for commercial purposes in manner described by the French philosopher Jean Baudrillard (1994) in his work on post-modernism. This is the reason for why we prefer to talk about drifting, which we see as an intentional activity: it is not

¹We use the concept of innovation to cover two ways in which it is used in design. It sometimes means a field of activity, like in design schools. In engineering and business literature, it usually means novel inventions that are being commercialized. Under the first meaning, design bring new things to the world, but pay less attention to whether it creates value in the second sense. Our usage covers both cases.

dramatic, and gives a picture of design as an occupation that indeed does change things and human relations, but usually through small, occasionally almost unnoticed changes. While carrying connotations of modesty, the concept of drifting does not rule out more dramatic shifts either, though. We believe it is better to see them as exceptions rather than as a rule. Design is much more than the peaking ideals, it is a dedicated profession also for all the mundane stuff we surround us with. A mundane de-dramatization also resonates with our Scandinavian heritage.

Throughout this book, we focus on ways in which drifting takes place when design becomes a research discipline. Our hypothesis builds on the idea of design accountability introduced in the writers' earlier work Ilpo Koskinen and Peter Gall Krogh (2015). As a research discipline, design sits on two chairs: design researchers want to make sure they are accountable — or at least intelligible — to practitioners, but in contrast to design practice, their work builds on knowledge and contributes to it. If design becomes an academic discipline, its relevance to practice suffers, we argued, unless it finds a way to create an academic base that is still understandable to practitioners (see Kees Dorst 2015). One corollary of this idea is that design practice sets limits to what can be done in design research. If we are correct, and design disciplines are different from each other, constructive design research should respect these differences as well. Product design and textile design are different, as are graphic design and interaction design. Similarities in creative process should not be taken as a proof against these differences, and this is the case of the identity of being a designer as well.

Our approach to these concerns builds on an analysis of various interpretations of knowledge in design. We claim that the way in which knowledge and practice work depends crucially on how we understand knowledge. Knowledge for us is more than scientific knowledge; it is also practical. Every cabinet maker knows that learning the craft takes years, and there are research techniques that maintain the skills that turn someone into a master of this trade. The concepts of knowledge in design research reflect this division, we believe. Hence, crucial to the undertaking of design research is our understanding knowledge and its implications. To put it on standard philosophical terms, when design becomes research, i.e. leaves the context of discovery and has to play the game of 'context of justification' (Karl Popper 2002: 7–8). With this shift, design changes to a ground defined by knowledge rather than practice alone. This has given us the main question of this book: how does drifting happen when designers have an imperative to produce knowledge and share it with research community?

In the past couple of decades there has been considerable steps to close a gap. Design departments in technical faculties and departments of universities have attempted to increasingly include art-based ways of working, and arts and crafts based design institutions and units have adopted a variety of research techniques, theories and methods to declare its relevance to other disciplines and society. To understand this shift, we have collected a corpus of PhD dissertations described in detail at the end of this book. A subset of these dissertations has served as analysis and reading material in a set of PhD courses offered to students with a background in arts and crafts based institutions while also inviting students from more mature