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Design Research: Making of a Connected Discipline Part 2

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Abstract: In “Design Research: Making of a Connected Discipline Part 1”, I argue that the social circumstances and the nature of design inquiry and the changing academic research practice which tend towards inter/ trans-disciplinarity render building a unified and bounded discipline unrealistic and undesirable. In place of unified and bounded, I suggest *connected* to be a more viable concept to think about disciplinary research in design. Here in Part 2, I make some suggestions to start making of a connected discipline.

Keywords: Design Research. Design Studies. Research Through Design. Connected Discipline.

1. Introduction

Despite the existence of societies, journals, conferences, and doctoral programs that generate increasing numbers of doctorates and research publications design research is not a coherent intellectual field with a clear boundary of its subject matter, nor an academic discipline founded on a consensual understanding of its purpose, methodology and pedagogical curriculum; subsequently, there is hardly any commonality across doctoral programs and the assessment of a doctoral degree is difficult if not impossible, so criticised the late design historian Victor Margolin (2016). He called to unify and bound design research. While agreeing with his critiques and appreciating his good intentions, in the accompanied paper “Design Research: Making of a Connected Discipline Part 1”¹ in this volume, I argue that his call is impractical as well as undesirable due to the social circumstances and the nature of design inquiry, and the changing academic research practice which tend towards inter/ trans-disciplinarity. It is concluded that fragmented design research is a condition, which must be accounted for when seeking solutions. The question must be reformulated as: how might (doctoral) research be assessed and knowledge be advanced in an incoherent field without clear boundary of its subject matter and without consensus on its purpose, methodology and pedagogic curriculum. In other words, how might the fragmented design research be organized to control

¹ The accompanied paper is referred to as “Part 1” in this article.

quality and make progress? Concomitantly how might knowledge generated by design research-cum-practice be evaluated and renewed?

Following my conclusion in Part 1 which suggests using the concept connected discipline to anchor our inquiry, I propose three instruments to start making a dynamically connected discipline. First of all, since there will not be soon wide consensus on the goal, the subject matter, or the methodology of design research; to move forward it is more feasible to agree on some formal or technical criteria that are neutral toward any position but are useful for controlling quality and making progress. I suggest novelty and generalisability. Furthermore, given disciplinary research is collective and requires communities, following Margolin, I propose to form special interest groups not only for those sharing commonalities but also those which are different but complementary. Here I particularly call for coordinated interaction between design research and design studies. Finally, as design research is highly fragmented, it is necessary to map it by employing models that are inclusive of a variety of research. I point to Jonas' model of Research Through Design for this purpose. These three proposals acknowledge the diversity of design research and leave room for researchers to pursue their own interests, and at the same time create conditions for them to connect and further develop. They are hypotheses meant to be debated and tested empirically. However, they are of course not all there is about a connected discipline and there are other complex intellectual and social-organizational issues to be identified and addressed. They are starters for reducing the fragmentation problems facing design research.

2. Novelty and Generalisability

Since design research is highly diverse in terms of theories, methods and outcomes, the criteria to control quality and to make progress should include as many variations as possible. For the assessment of all self-declared design research and particularly research-cum-practice², we might agree on some basic formal or technical criteria that are neutral. I propose using novelty and generalisability as the most fundamental criteria. There are certainly other important criteria³; however, these two are particularly useful for our situation. They are used across most if not all research disciplines for assessing the values of knowledge claims and to ensure research result is worth dissemination. They are instruments for quality control independent of subject matter and methodology. They do not infringe on or favour any position or definition of knowledge. Most importantly they help connection.

The criterion novelty helps connection because novelty is judged relatively in research. A contribution is considered new when contextualized within a body of disciplinary knowledge. A major problem I see in design research is, referencing knowledge from other disciplines, which is often done, is necessary but not sufficient. To claim novelty, design researchers must reference existing ideas and solutions, position their work to similar projects and make explicit the differences and advantages of their contributions in relation to other design research. This referencing practice among design researchers is essential for building and renewing a collective body of knowledge and reducing uncontrollable fragmentation.

Besides being novel, a knowledge claim should have some degree of generalisability, a point that opponents of research-cum-practice often raise. Generalisability has its own controversy, and questions can be raised about its inclusiveness. However, although I use the word generalisability, I also mean applicability, and other concepts that point to scale of relevance. This criterion helps

² Research-cum-practice refers to Practice-Led Research, Project-Grounded Research and Research-Through-Design, Constructive Research, and their variations.

³ See a summary of evaluation criteria for Research Through Design in Godin and Zahedi (2014).

sorting the large volume of sound but unexceptional projects from those that are more ground-breaking. In much research-cum-practice the result is often particular or singular, specific to the context; but distinction can be made to the results which are more outstanding due to their applicability and relevance to other contexts. In other words, some particular or singular result is more generalisable, transferable, or extendable. The concept of 'Type' by Donald Schon (2009) can help understand what I mean. Type is either a particular that functions generally or a general concept that has the richness of the particulars. For example, bird is a category, but a robin could be a Type. The well-known King's Fund Hospital Bed by Kenneth Agnew with Bruce Archer is a good design example. It is a particular (bed) that represents a type (of bed). The bed has such a high degree of generalisability that the subsequent hospital beds designed are a variation or an improvement of it. In sum, a particular or singular design research result that has a higher degree of applicability to other contexts is more valuable.

If the criteria of novelty and generalisability are used, then assessing and determining genuinely new and significant knowledge will be made more effective and efficient. Besides, these two criteria are relatively easy to implement, all that is required is for researchers to state the novelty of their contribution and announce the degree of generalizability in relation to other design research results. For example, for this conference, these two requirements could be added to the checklist on the submission paper template and be the guiding evaluation criteria. Since design research is not bounded and literature is scattered all over the place, for these two criteria to function, the existence of multiple communities of researchers is a prerequisite.

3. Building Interconnected Special Interest Groups

I agree with Margolin (2016) that establishing special interest groups is necessary for design research to evolve into a discipline. Special interest groups are often bottom-up, relatively small and might be short-lived; but as a basic unit of organization, they are quite suitable for our situation. If there are many groups and each researcher belongs to multiple groups, or when there are interaction between groups, then many researchers might eventually be interconnected. The chance for cross reference will become much higher. Besides, if each group might consolidate its knowledge to serve as the basis for further development, then slowly but surely multiple bodies of robust knowledge will emerge and might even merge. Thankfully in recent years many special interest groups have been formed and some publications aiming for consolidation have appeared. The Routledge Design for Responsibility series is a good example. In *Design for Behaviour Change* (Kristina Niedderer, et al, 2017) the editors bring together researchers working on the topic. An array of models and tools drawn from psychology, philosophy, sociology, and cultural studies are mapped. However, as the editors are aware, all these models and tools have yet to be evaluated. At this point, the weaknesses and problems of design research become again obvious. There is not *the* framework for evaluation. Advancement must come from within and depend on researchers examining, correcting, and building on one another's works. It cannot be overemphasized that unless researchers engage with one another, there is no community, let alone a field of research. Besides bringing together researchers sharing the same interests, additional efforts should also be made for those with different interests, for example, design studies and design research.

3.1 Synergizing Design Studies and Design Research

What should be the subject matter of design research has not been widely agreed. Nigel Cross (2001) suggests design epistemology (study of designerly way of knowing), design praxiology (study of practice and process of design) and design phenomenology (study of form and configuration of artefacts). These categories are useful but nonetheless incomplete. Herbert Simon (1996) describes

designing as adapting inner environment to outer environment to achieve goals. Or in common design language, fitting form to context for purpose. So, there are three basic types of substantial knowledge needed for design, namely knowledge of form, context, and goal. Logically design research should supply knowledge in these three subjects. Cross rightly proposes the cognitive ability and the process to create forms and the form itself as the foci of design research. However, context and goal should not be omitted. Goal is set by stakeholders and value laden, by today's ideals, it should be done democratically and informed by human values and ethics. These topics point to design studies which Margolin has tirelessly promoted.

Margolin (2016) suggested differentiating between research in design and design studies. Research in design is aimed to support design practice and design studies is to articulate the roles and values of design in society and culture. Unfortunately for the most part, these two research areas remain quite separate with little interaction. Design studies scholars come from multiple disciplines including history, cultural studies, philosophy and more. Before design studies exists, reflective designers have consulted these disciplines on their own to draw implications for design. Having a group of professionals to exam the socio-cultural aspect of design is indeed valuable. However, since their research output is not meant to be directly applicable for design practice, there are some challenges. As they should, design studies scholars tend to take a more macro view that is very helpful for setting general goals and agenda, but it is less useful or applicable on the micro level on which designers work. Furthermore, their often abstract and jargon-laden literature requires a substantial investment in time and intellectual energy that create a barrier for exchange. The barriers can be crossed with help from design researchers, however. Cognitive scientists and psychologists have established principles for human machine/computer interaction in physical and cognitive-emotive dimensions. Designers with a scientific bent draw on this body of knowledge to guide developing usable forms. Engineering researchers turn scientific theories into engineering principles and models for professional engineers to use. The same can reasonably be expected from design researchers who might turn knowledge gained in design studies into principles and models to be used in design practice.

I single out design studies and design research because their collaboration is arguably the most underdeveloped and yet most important. As the conference organisers note, the social aspect is increasingly dominating design and architectural practices, we will gain much if there is much more interaction between design research, design studies and design practice. To get started, a special interest group synergizing them will be useful. The development of interconnected special interest groups must be deliberately coordinated and favourable conditions and supporting devices should be created for their flourishing. A map of design research to aid orientation can be a practical tool.

4. Mapping Research for Orientation

Since multiple traditions, methodologies and forms of knowledge coexist in design research, it will be helpful to put them in relation for orientation. I propose to use Wolfgang Jonas' model. There are of course other compelling models of design research that are worthy for discussion, but space does not allow elaboration here⁴. I particularly present Jonas' due to its comprehensiveness and inclusiveness and to the fact that his model is often not referred⁵. However, I do not intend or expect Jonas' model to be embraced, but if it will be examined, then a connection is made.

Jonas is an outspoken proponent for Research Through Design (Jonas, et al 2010), but what gets lost sometimes in the fierce defence is, his model is inclusive of scientific and artistic inquiry. He never opposes to disciplinary knowledge production or scientific methods and theory building; he merely

⁴ See Chow 2009 and 2014 for more details.

⁵ For example, in one of the more thoughtful recent reflections on research through design, Jonas is not mentioned, see Brian Dixon (2019).

believes by itself it is insufficient. In Jonas’ conception, design as a form of inquiry includes three major domains or modes of knowing and questioning. He names them Analysis(A), Projection(P) and Synthesis(S). Science, art, and technology are the prototypical examples for each domain respectively, though the distinction is relative. Analytical thinking is best suited to describe and explain what is, projecting thinking for imagining what could be and synthetic thinking for judging what should be. Knowing what is however does not guarantee knowing what could be or should be and vice versa. Like others, he suggests the separation of different modes of knowing into various fields paralyzes our ability to address contemporary problems which complexity calls for inquiry that is fundamentally transdisciplinary in nature. Jonas sees that the three modes of knowing: Analysis, Projection and Synthesis address the different types of questions in transdisciplinary projects, and he has developed a useful model for categorizing different types of research that are inclusive of many if not all (see Table1). This normative model outlines compact units of academic traditions and their associated methodological processes and form of results. As shown in Table 1, there are nine different processes with specific orientations. It will be out of scope to go into details here; however, I want to show an example of its usefulness. Using it, I detect that Projection is not widely pursued in design research now.

In much research-cum-practice the subject matter is not design but something else, such as sustainability, health, security, well-being and more. Scientific or scholarly knowledge about the subject is often consulted and from which principles, models and tools are developed. This is very useful especially when multiple disciplinary knowledge is integrated, synthesized, and rendered understandable for practitioners. However, scientists and scholars are arguably experts at Analysis who often if not always provide the theoretical and methodological bases for design researchers. It is design researchers who are or supposed to be good or better at imagining future alternatives. This means Projection in Jonas’ model. However, there is comparatively little development in Projection except for some isolated endeavors, such as Speculative Design (Mitrović 2021). There is likely some design research which does not fit into Jonas’ model and empirical research and design application will eventually test its usefulness. However, drawing attention to it is important as to my knowledge there is few model as inclusive as his.

Table 1. Design Research Process Types. Copyright © 2010 Jonas and Chow.

1	A	P	S	A complete design research process	Intelligence and goal-driven problem-solving as the driving and leading activities in the design research process with/without synthesis
2	A	P		A concept/future studies process without realization	
3	A		S	A ‘normal’ design process without proper projection	
4	P	A	S	A ‘complete’ design innovation process	Design projection as the driving and leading activity in the innovation/exploration research process with or without synthesis
5	P	A		An explorative process without realization	
6	P		S	A ‘risky’ ‘speculative’ trial-and-error process without analytical ground	
7	A			An analytical research process (inquiry into the ‘true’)	Disciplinary, domain specific research or practice.
8		P		A projective future studies process (inquiry into the ‘ideal’)	
9			S	A synthetic realization process (inquiry into the ‘real’)	

5. Conclusion

In Part 1, it is concluded that to improve the state of design research, a fragmented adhocracy, it is more productive to make the best of its diversity and pluralism by connecting the fragments. Here in Part 2, I have reiterated that the key to making of a discipline is collective interactions especially examining, extending, and correcting others' ideas and research. I suggest using neutral and well-honoured criteria such as novelty and generalizability to assess all research output; building interconnected special interest groups, including one for design research and design studies and employing comprehensive models to map design research, such as the one by Jonas. These suggestions are by no means comprehensive but are the first set of concrete instruments to solve the problem of fragmentation. However, they will have no effect unless implemented and thus require professional coordination, management, and good will. Margolin calls on all the research coordinators to examine their programs and work practices. Complementarily, I call on the presidents of design associations, editors of journals and book series to come together to guide the process of renewal. If we act as a collective (and this is by no means a given), we might advance design research.

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Rosan is Professor of Design Theory. She has been interested in understanding and establishing Design Research since she began her doctoral study at the turn of 21st Century when there were exciting and controversial debates raging on the topic.

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