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Commentary

The Role of Theory in Design:
Reflections on "Examining Practical, Everyday Theory Use in Design Research"

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The article "Examining Practical, Everyday Theory Use in Design Research"[1] by Jordan Beck and Erik Stolterman offers an opportunity to comment on an issue that is fundamental to design scholarship – the use of theory.

Design has had a complicated relationship with theory. The field has traditionally focused on craft – the activities of making and doing. In recent years, the study of design has moved into university settings, a shift that has necessitated what Friedman calls "reasoned inquiry."[2] This expansion has also positioned design as a research field, which demands the use of theory. Research requires systematic approaches, methodological rigor, and theoretical depth. As design scholars improve the structure of their field, more emphasis on how design theory is articulated and used is valuable.

Beck and Stolterman analyze how theory is used in design research. In this, they take a step toward understanding the basis of design scholarship. The authors point out that others[3] have also examined theory to expand our understanding of design research and practice. The focus of their article is to investigate how scholars employ theory in their writings on design studies. Despite its broad application, this issue is not often given attention. Scholars treat theory as sacrosanct – an unquestioned reality of research. By focusing on this area, the authors do an important service to the field.

Yet there are also issues, gaps, and unresolved tensions within the article. I point to some of these as broader considerations for design as a research field. These issues are important to address as design research strengthens its position in universities.

To begin, scholars must be specific and careful with terminology. Yet the article lacks a strong working definition for theory. The authors note early on, "in this article our aim is not to demarcate or define theory. Instead, our aim is to investigate how researchers present their use of theory in written texts." Yet this creates a dilemma – the article lacks a definition for the key object of study. They state that their goal is not to define, and this statement appears to mitigate that lack. But without clarity about the author's perceptions regarding the object of study, it is hard to say if the uses of theory they analyze are appropriate or not. It is uncertain on what terms they are dealing with theory. Without a baseline, the analysis becomes fuzzy.

For example, it is not clear what the authors mean in saying that a paper is "theory-driven," (or not). This uncertainty continues to crop up in the discussion. The authors use the word "frameworks" as similar to theory. But they never explain how these terms relate or differ, so our understanding remains murky. There is a similar problem where the authors speak of developing "models" for using theory. Again we might ask how models are different from theories and frameworks? We could assume the authors see distinctions, but this requires clear treatment in the text. There is a broader point here for design research. It is essential that scholars explain the meanings of and relations among their objects of investigation.

There are multiple dictionary definitions for the term theory. The authors' meaning may be similar or different. But the key point is to give a working definition that readers can refer to. One online dictionary[4] defines theory in multiple ways, including:

1) "The conceptual basis of a subject or area of study.
2) The body of knowledge relating to the properties of a concept [...].
3) Abstract knowledge or principles.
4) Mental view, insight, contemplation.
5) An explanation of a phenomenon arrived at through examination and contemplation of relevant facts; a statement of one or more laws or principles describing an essential property of something.
6) A hypothesis or set of ideas."

These are only a few possibilities. There are relevant differences among the definitions out there that affect how we work with theory. There are also common foundations that help us understand and analyze it.

Theory gives an explanatory power through the

application of general principles and abstractions. We can understand how objects in motion behave based on Newton's second law. We see how errors in memory are explained by knowledge arrangements in the head (schemas). These are big abstract concepts, but they have robust, real-world effects on understanding. Using a definition and a few examples of a concept like this makes the abstract more real. Readers enter the discussion with a common understanding of the object of study.

The same thing can be said about frameworks and models. Frameworks and models are not always interchangeable. They may have different principles, characteristics, and features of causality. It depends on what scholars intend when they employ these terms — the point being that it is important to treat core terminology with care, and elaborate through references or literature. This provides context for the ideas, and gives more clarity and meaning to the discussion.

How Beck and Stolterman frame their study reveals a related tension — the authors have analyzed how other papers use theory, but it is not clear how it informs their own work. In disciplines such as philosophy of science, social science, and others, scholars have carried out numerous examinations of theory. Building a more extended discussion around diverse works or references in this area would enrich the ideas. The current theory gap in the article actually reveals what theory offers as a framing device — it filters the work through a lens of meaning, and places it within a broader conversation. Without theory, a study lacks connection to existing work, or a sense of wider impact. What we get is just a list of ways in which theory is used, minus a sense of what this means.

There are also a few concerns regarding how methods are discussed. A clear, justified experimental methodology convinces the reader of the researchers' precision. This care in methods supports the findings. Authors must be cautious to avoid assumptions, or expect readers to trust without verification. Readers do not instinctively know why the researchers did what they did — so details, references and explanation must be transparent. Strong justifications for methodological choices help validate conclusions.

One example here reveals how the authors' oversight echoes larger issues in the field of research. The authors state that they engaged in a round of "unmotivated looking" at the texts. But without a reference or theoretical justification for unmotivated looking, we could ask if this is a known technique. To an unfamiliar reader, dropping the term with no reference is

insufficient. It misses an opportunity to connect to a recognized approach. There is, in fact a solid methodological justification. Blumer,[5] Psathas,[6] and others note "unmotivated looking" as a preliminary step to becoming familiar with the terrain of study. Beck and Stolterman likely engage in this technique to build an informed position before developing their ideas. The problem is not in their method of approach, but in its cursory mention. This may seem a small point — a minute detail of the methodology. But single steps and details form the pattern of an argument advancing the study's methods.

I use this example to point to a bigger problem in the arena of qualitative research. Scholars know the rationale for their methods, and assume others do also. Within the given subject area — design — this may be true. But Anfara, Brown, and Mangione[7] point out that the worth of a research endeavor is assessed by many audiences. Critics often state that qualitative inquiry is "fiction, not science"[8] in which researchers make up the methods as they go. I have heard similar statements — in direct comments from notable scholars — leveled at the entire field of qualitative inquiry. Methodologists[9] suggest this pervasive view derives from a common problem in qualitative work where researchers unintentionally skip over references, justifications, or arguments for their methods. More broadly, this leads to qualitative approaches seeming to lack empiricism, or being unfairly "tarred with the brushstroke of sloppy methods."[10] This is a shame in cases where reasonable methods have been applied but not contextualized or referenced.

Questions about the coding and analysis — which arise out of similar gaps in reasoning — also remain here. For example, "no theory" is given as a code category. This is questionable, because zero examples of "no theory" arose in the data. Such a category choice appears ad-hoc when it defies the data — especially in coding described as emergent or using grounded theory. The justification that "such papers exist" is not enough, because such papers did not show up in the data. Without better justification, it becomes a casual assumption. Again, each methodological choice requires a solid rationale.

This relates to a larger point referenced earlier — design research needs clear terms and selection criteria in methods. Without these, it is hard to know how the authors have identified theory in the articles. I give a few examples below to show how this can become blurry. There are more examples that could be noted, but these show how concerns arise.

In one instance, Beck and Stolterman state:
"'This paper discusses issues and ways of

measuring the reliability of segmenting verbal protocols of design activity, a central focus of design research.' They identify the theoretical object 'design moves' in the abstract, but amplify its role in a subsequent section of the paper. 'The present study uses the qualitative concept of "design moves" as the criterion for unitizing/segmenting transcripts of design processes….'"[11]

Statements like this skip past the line of reasoning. Readers might ask, how is this theory? Is a "qualitative concept" an example of a theory? What makes "design moves" a theoretical construct?

In another example, the authors state:

"While Grierson does not necessarily align the different theories she uses in her paper, her paper manifests the use of theory as a methodological tool. She writes, 'Blessing, Chakrabarti, and Wallace's (2009) Design Research Methodology was used. It was beneficial in adding rigor to the work through a requirement for a deeper understanding of phenomenon via focused descriptive studies.'"[12]

This returns us to the problem of terminology — is methodology the same as theory? Is theory an approach to methodology? Uncertainty with terms weakens the goals of empirical analysis. Design research needs rigor, which means taking care not to leave readers with hanging questions, unsubstantiated assumptions, or conceptual leaps.

Whenever we identify gaps or questions in research, an area for more attention is revealed. Transparency and explanation are the cornerstones of research defensibility. Applying rigor to the employment of terms, theory, and methods creates a line of reasoning that should validate the work.

My aim in this commentary has been not only to highlight the latent potential present in this research, but also to promote broader research discussion based on some of its issues. As design continues to grow as an academic field, investigations into theory are of considerable value. It is a pleasure to be a part of that conversation.

1 Jordan Beck and Erik Stolterman, "Examining Practical, Everyday Theory Use in Design Research," *She Ji: The Journal of Design, Economics, and Innovation* 2, no. 2 (2016): 125–40.

2 Ken Friedman, "Theory Construction in Design Research: Criteria: Approaches, and Methods," *Design Studies* 24, no. 6 (2003): 507–22.

3 Friedman, "Theory Construction," 507–22; Terence Love, "Philosophy of Design: A Meta-Theoretical Structure for Design Theory," *Design Studies* 21, no. 3 (2000): 293–313; Karl E. Weick, "Theory Construction as Disciplined Imagination," *Academy of Management Review* 14, no. 4 (1989): 516–31; Karl E. Weick, "What theory Is Not, Theorizing Is," *Administrative Science Quarterly* (1995): 385–90.

4 OED Online, s.v. "theory, n," accessed February 12, 2016, http://www.oed.com/view/Entry/200431?redirectedFrom=theory.

5 Herbert Blumer, *Symbolic Interactionism: Perspective and Method* (Berkeley and Los Angeles: University of California Press, 1986).

6 George Psathas, *Conversation Analysis: The Study of Talk-in-Interaction*, Qualitative Research Methods vol. 35 (Thousand Oaks, CA: Sage, 1995).

7 Vincent A. Anfara, Kathleen M. Brown, and Terri L. Mangione, "Qualitative Analysis on Stage: Making the Research Process more Public," *Educational Researcher* 31, no. 7 (2002): 28–38.

8 Norman K. Denzin and Yvonna S. Lincoln, "Introduction: The Discipline and Practice of Qualitative Research," in *The SAGE Handbook of Qualitative Research*, 2nd edition, ed. Norman K. Denzin and Yvonna S. Lincoln (Thousand Oaks, CA: Sage, 2000), 8.

9 Kenneth Howe and Margaret Eisenhart, "Standards for Qualitative (and Quantitative) Research: A Prolegomenon," *Educational Researcher* 19, no. 4 (1990): 2–9.

10 Egon G. Guba, "Criteria for Assessing the Trustworthiness of Naturalistic Inquiries," *Educational Technology Research and Development* 29, no. 2 (1981): 75–91.

11 Beck and Stolterman, "Examining Practical, Everyday Theory," 132; Gabriela Trindade Perry and Klaus Krippendorff, "On the Reliability of Identifying Design Moves in Protocol Analysis," *Design Studies* 34, no. 5 (2013): 612–35.

12 Beck and Stolterman, "Examining Practical, Everyday Theory," 133; Amaresh Chakrabarti and Lucienne T.M. Blessing, "Theories and Models of Design: A Summary of Findings," in *An Anthology of Theories and Models of Design* (London: Springer, 2014), 1–45, accessed February 12, 2016, http://link.springer.com/chapter/10.1007/978-1-4471-6338-1_1; Hilary Grierson, "Detailed Empirical Studies of Student Information Storing in the Context of Distributed Design Team-Based Project Work," *Design Studies* 34, no. 3 (2013): 378–405.

Commentary on "Examining Practical, Everyday Theory Use in Design Research"

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Disclaimer. The authors of this paper are my colleagues at Indiana University, and I work closely with both of them.

"Don't think, but look!" Wittgenstein famously wrote, advising us not to rationalize what we assume must be the case, but rather to look and see what is the