

# Introduction

The articles in this issue of the journal could easily constitute the entire reading list for a course in design theory or even a design studio course—we observe that more and more studio courses in schools around the world include a component of reading and discussion that sharpens the professionalism of the field of design. However, the articles also offer a guide to the practicing designer in the new turns of contemporary design thinking. On one hand, the articles cover a range of classic design issues as they are reformulated in contemporary circumstances. The issues range from form and function, materiality and objectivity, technologies, the strategy and methods of design research, to the agency of design—who is the designer and who participates in the activity of designing. On the other hand, many of the articles directly or indirectly address themes that have growing importance in design practice in all of its professional branches. One is the social dimension of design. The other is the relationship between the discipline of design and the interdisciplinary connections that are now so much a part of design practice: how do we bring diverse kinds of knowledge drawn from many fields together in effective design work?

In the first article, “Reconsidering the Form and Function Relationship in Artificial Objects,” Anthony Crabbe discusses one of the often cited principles of twentieth-century design: the dictum from Louis Sullivan that implies a direct causality between function and form—i.e., “form follows function.” His contribution to the discussion of this theme is to elaborate the communicative functions that products may fulfill and, particularly, how the reuse or repurposing of products may reveal functions not anticipated by the designer. He offers interesting examples to show that the analogy between natural and artificial forms may “mislead any analysis of Sullivan’s ‘law.’” The argument and examples do not end debate over the nature and relationship between form and function, but they do add new materials for discussion and thought. In a sense, Crabbe’s work extends a discussion begun by Moholy-Nagy when he wrote in “Design Potentialities” (1944): “function is not only the work to be accomplished for a limited mechanical task, but must also fulfill biological, psychophysical and sociological requirements as well.”

In the next article, “Creative Practice and Critical Reflection: Productive Science in Design Research,” Kaja Tooming Buchanan enters the discussion of the nature of “design science” by

distinguishing “productive science” from other theories of design science that tend to be reductive and positivist. She points to the long history of productive science—perhaps better known as “poetics” from the Greek term for “making”—as a framework for understanding the creation of all human-made products. She argues that productive science offers an important alternative for design research and reflection that is well grounded in creative practice. It is the relationship between theory and practice that has been so problematic for followers of Herbert Simon’s theory of design science as they attempt to reduce practice to underlying cognitive processes—the link is always promised but never fulfilled except in rather abstract notions of “information processing in the brain.” Buchanan discusses the key elements of productive science, shaped around issues of form, matter, function, and agency—the multiple and pluralistic causality that distinguishes this approach from others. She then provides an interesting example of practical design work that grounds theoretical reflection in immediate practice, demonstrating how the elements of analysis and synthesis may guide research as well as practice—recognizing the mysterious place of creative synthesis.

The next article moves into the social in a different way than either Crabbe or Buchanan. In “Opening Up Technologies to the Social: Between Interdisciplinarity and Citizen Participation,” Susana Nascimento and Alexandre Pólvora explore the relationship between the field of design and the field of science and technology studies (STS). We have published other articles that represent the juncture between design and STS, and this article continues a theme that interests many readers, whether from the perspective of co-design, participatory design, or social innovation. However, it is the theme of “interdisciplinarity”—a somewhat barbaric and graceless term for which we have no other alternative at present—that offers an interesting view of the central feature of the article. As the authors write, “Interdisciplinary engagement isn’t a simple disciplinary juxtaposing or shared teamwork, but in our view something that entails new modes of practical and conceptual collaboration that are able to integrate material qualities, building procedures, operation modes, esthetic features, technical orientations, etc., with cultural contexts, political consequences, ethical scenarios, convivial uses, etc.” For designers who are now working in the area of public sector design and social innovation, this is certainly a useful article.

Participation is also the theme of the next article by Marie Harder, Gemma Burford and Elona Hoover. In “What Is Participation? Design Leads the Way to a Cross-Disciplinary Framework,” the authors present a way of thinking that they believe will be useful in exploring the concept of participation across many disciplines. The way is an interdisciplinary approach to the plurality of

meanings embedded in the concept of participation that are represented in different terms. Furthermore, they argue that design “is the best field to lead on this, and show specific connections to several other disciplines,” since participation and related concepts such as “user-centered” and “co-design” are well established in the central area of design work. They explore the concept of participation with care, offering examples of the different aspects of participation that they characterize.

If the previous articles firmly place products and forms in a social context, the next article turns in the opposite direction, arguing that an emphasis on “objects” in Western industrialized design hides the “energetic and material circulation” of our environment. In “Designing Environmental Relations: From Opacity to Textility,” Mike Anusas and Tim Ingold draw on the philosophy of Vilém Flusser to argue that humanity is trapped “within a vicious circle of increasing environmental alienation” because of a logic of form that casts “the material world in the guise of *objects*.” Their proposal is that designers should think of form as “textilic.” That is, we should recognize that the material world is comprised of energetic lines, and that design is the practice of “enriching the weaves that bind people and their environments.” The authors offer several neologisms to capture the meanings that they see in design and environmental relationships, and they provide interesting examples of how a new perspective on objects may lead to changes in social and environmental relationships. The article concludes with a discussion of “design anthropology,” in a sense returning the discipline of design to the social dimension of the earlier articles.

With the importance of the social dimension in design evidenced in the previous articles, it seems quite appropriate to think about how designers gain knowledge of the human beings they seek to serve. That is the central theme of the next article, “A Support for Protocol Analysis for Design Research” by Prabir Sarker and Amaresh Chakrabarti. They provide a clear, concise discussion of the method of protocol analysis and its place in the context of design research. As they point out, the method is particularly useful for validating cognitive and information processing theories, giving designers insight into the strengths and limitations of designs that seek to communicate complicated information for decision-making in a wide variety of situations. This is a qualitative research method, revealing user behavior and understanding in considerable detail. The method can be elaborated in detailed data capturing and interpretative phases. This involves careful coding of behaviors, and the authors present examples as well as a tool for transcribing protocol sessions. However, it is well to remember that protocol analysis can yield useful insights even without elaborate coding. This article helps to reinforce the value of user research in the design process.

In our final article, “Engaging Complexity: Social Science Approaches to Green Building Design,” Krishna Bharathi offers a sophisticated discussion of the role of a social science perspective in design activities. She acknowledges that when the social science perspective arises in discussion, the tendency is to see a shift “from a study of things to a study of people.” In contrast, she seeks to show how a social science perspective can augment how the design of the built environment is understood. Though this article uses examples drawn from architecture and the engagement of complexity in building design, the deeper theme of a social science perspective is relevant to all disciplines and branches of design practice. As the author observes, “In an era where pluralistic concerns must be balanced with ontological understanding, all designers should consider how disciplinary framings can shape their solutions.” Similar to earlier articles in this issue of the journal, this article also explores the relationship between discipline and interdisciplinary in a way that helps us understand why design has become a leading example of how interdisciplinary theory and practice are taking shape at the beginning of the twenty-first century.

In addition to articles, there are also three book reviews on works that are of considerable interest in the design community. In the first review, Carma Gorman looks at *Standards: Recipes for Reality* by Lawrence Busch. In the next review, David Stairs offers a controversial view of *Adversarial Design* by Carl DiSalvo. And in the final review, Fred Turner looks closely at *The Idea Factory: Bell Labs and the Great Age of American Innovation* by Jon Gertner.

From the perspective of design theory, the articles in this issue of the journal articulate many of the essential themes discussed in the contemporary design community, while also providing excellent examples of the products and practices that ground theory in the activity of making and in the social implications of design. From the perspective of design practice, they offer the kind of reflection in which many designers engage as they think about the larger context and implications of their work.

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