

Copyright © 2003 Ken Friedman.

This is the author’s version of the work. It is posted here with the permission of the publisher for your personal use. No further distribution is permitted. If your library has a subscription to this journal, you may also be able to access the published version via the library catalogue.

Accessed from Swinburne Research Bank: http://hdl.handle.net/1959.3/58868

Ken Friedman

This deep and serious inquiry into the philosophy of design locates several important questions at the intersection of theory and practice. In an earlier book, Bucciarelli (1994) examined the consequences of the fact that design is both an instrumental process and an activity that always takes place in social context.

The twin locations of design require us to reflect on designed artifacts in at least two ways. One involves structural properties: analyzing the physical and technical properties and behavior of the artifacts we design. The other involves functional properties: the purpose and role that the artifacts we design take on in social use.

One of the serious problems we encounter in many theories and philosophies of design is the tendency to focus on one of these themes while excluding the other. This would not be as great a problem as it often is if it were not for the fact that the advocates of one perspective often articulate their view in declarative, universal language. Rather than bracketing their concerns while acknowledging other issues, they dismiss other perspectives as unimportant to the philosophy of design. This leads to passionate and often interesting debates, but it makes for poor philosophy. Worse, many of those who write on the philosophy of design (or attempt to do so) ignore the serious stream of inquiry that has emerged over the past few years. Some write as though each had personally and individually created the field, without acknowledging that philosophers from Aristotle on have addressed these issues.

While there have been relatively few books on philosophy of design, many philosophers have considered the issues involved in the field. The past decade has seen a rich stream of articles, conference tracks, and special journal issues coming from many design disciplines. This is an important contribution to the growing literature.

Bucciarelli is professor of engineering and technology studies at MIT. He began this book at the Technical University of Delft where the Philosophy section and the School of Industrial Engineering Design jointly hosted his stay as visiting professor. He identifies the aim of philosophy in a way that makes sense to a thoughtful
designer. It is 'to clarify, to analyze, to prove, and explore alternate ways of seeing, of speaking, and, ultimately, of remaking the world' (Bucciarelli 2003: 4). The author explores philosophy as the basis of a book with an intensely practical goal: 'I want to explore in what ways it might contribute to doing a better job of designing, and, as a teacher of the craft how it might help us in better preparing our students for life as well as for professional practice' (2003: 1). Bucciarelli writes modestly as someone entering a new 'scholarly discipline, a whole other world requeiring new learning, a new vocabulary, a new sense of what is a legitimate question - none the less what is an important question - and what constitute a coherent, legitimate response' (2003: 2). The book is the elegant result of his inquiry.

After introducing the field, Bucciarelli explores the nature of design as a social process. He compares design with language as a human construction embedded in and coterminus with a range of social activities. 'Design is a process', he writes, 'which engages individuals, each with different ways of seeing the object of design but yet individuals who in collaboration, one with another, must work together to create, imagine, conjecture, propose, deduce, analyze, test and develop a new product in accord with certain requirements and goals' (2003: 9). 'What complexifies the situation', he concludes, 'and makes designing a challenge of the highest order is that each participant sees the object of design differently.'

Bucciarelli then develops the concept of a proper language, and he locates this language in what he labels object worlds. From here, he moves to a deliberately provocative chapter titled, 'What engineers don't know and why they believe it', addressing the world of negotiated issues that constitutes the design engineering process. In the next chapter, he discusses the problem of knowledge, examining distinctions between information and knowledge that have occasionally confused philosophers and those who write about how (and what) we know (2003: 45-47). From here, he steps back into history to consider the distinctions (and relations) between the worlds of knowing that and knowing how. He takes a case study from Galileo's Dialogue Concerning Two New Sciences, using Galileo's discussion of the cantilever beam (2003: 55-57) to show how designers construct theories, and to demonstrate how one can be right and wrong in developing the insights that further the knowledge of a field. In this, Galileo is an important contributor to science and engineering both, and to the art of design as an understanding of how to change the world.
linked to the practice of change agency.

In a chapter of learning, Bucciarelli (2003: 77-97) applies the ideas and issues he develops to studying and teaching engineering design. This chapter posits different models of education, and draws from them conclusions on the differences in how we learn to design and what we learn about the design process. Of particular importance in philosophical terms is the discussion of how effective teaching builds on student misconceptions. Comparing this process with historical cases of inquiry, Bucciarelli (2003: 90) writes, 'In using history, we study ideas in a world of the past, of past institutions and infrastructure, of people and apparatus long since gone, the evidence for which survives only in texts and an occasional artifact. There we find incongruities, anomalies, concepts we might never imagine, often error, and even the still unheard of. But we don't need to reach back to the past to encounter these phenomena in rational scientific thought; we need only listen carefully to our students.' This is the core of one philosophical challenge that Bucciarelli set out to address at the start. This involves using inquiry to shed light on and better understand the design process, and in doing so, using philosophy to improve the practice of design.

Bucciarelli is remarkable in his ability to develop clear concepts that respect the subtle and often ambiguous networks of ideas, themes, and processes that he describes. This makes Engineering Philosophy useful in two ways. The first is obvious: anyone concerned with philosophy of design and inquiry into the philosophical issues surrounding design practice will find this book a deep and well argued contribution.

The second use involves learning. Bucciarelli addresses a wide range of important themes in just over 100 readable, concise pages. This is a perfect seminar text for research students beginning their inquiry into design. Students new to design research are often confused about the relation between theory and practice. They struggle with the conceptual and methodological subtleties implicit in a field that involves both the structural and technical properties of the artifacts we design and their functional properties in social context. While Bucciarelli offers his own opinions, his views do not dominate the discussion. Instead, he states his case against the background of several views and multiple models, inviting the reader into a dialogue that promotes inquiry and learning.

Engineering Philosophy joins serious scholarship and
reflective practice. It encourages robust inquiry and provides a model for the philosophy of design in a context of intelligent pluralism.

References
