

Introduction to this Special Issue* on
Foundations of Design in HCI

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Foundational Issues of Design in HCI

Design is the most fundamental topic in human-computer interaction. Whatever understanding we may achieve of human capabilities and preferences, the social and cultural construction of activity, and the gamut of technological possibilities and constraints, we still have to put it together in order to have any effect on the world. The artifacts we design – infrastructures, systems and applications, policies and curricula – are the most important results of our endeavors.

Design is appropriately one of the core topics of the *Human-Computer Interaction* journal. But unfortunately, there are never enough papers on design. In my role as a member of the Journal's editorial board I was fortunate to recently handle three design papers. Tom Moran, the *HCI* Editor, suggested presenting these in a special issue on design. And indeed, these three papers offer an interesting spectrum of practical and intellectually substantial viewpoints on foundational issues of design in HCI.

Lars Hult, Magnus Irestig and Jonas Lundberg describe the concept of *perspectives* – frameworks through which people experience and act. A designer's perspective affects possible design outcomes. Hult, Irestig and Lundberg developed four design perspectives the Tool, the Architecture, Usability, and Media, each defined by eight dimensions. For example, one dimension is the artifacts of a perspective, the central materials that are shared and interacted with, such as software, user interface widgets, information presentations, and so forth. Their investigation involved workshops in which the design perspectives were used and evaluated. Hult, Irestig and Lundberg suggest that constructing multiple perspectives, and exploring a design problem and situation from within those different perspectives, can be a powerful resource to designers and to students of design.

Andrew Dearden and Janet Finlay review and analyze the use of patterns and pattern languages in HCI. Patterns are just standard solutions to recurrent problems - a simple idea, really, but one that has found utility in many design domains. As Dearden and Finlay emphasize how patterns address long-standing and fundamental questions about sharing and applying theory in HCI: They provide a moderate level of abstraction, concrete enough that users, application designers, and system architects all can contribute, understand, and share understanding. They help to anchor design rationale and design values, making it easier for designers to articulate and manage the embedded meanings and consequences of their designs. Dearden and Finlay rightly emphasize a research agenda for design patterns: Patterns are a powerful idea that can be further cultivated.

Willemien Visser reviews a substantial body of empirical research and theoretical discussion about design as cognitive activity. She seeks to reconcile two classic lines of theorizing about design: One, following Herbert Simon among others, views design as

problem-solving of ill-structured problems, the other, following Donald Schön among others, views design as improvised construction tightly coupled with reflection. Visser argues that the two views can be integrated in a concept of design as the *construction of representations*, where representations are taken to be artifacts, both cognitive and physical, that codify the current state of a design, while also suggesting directions for further development.

These three papers nicely capture the scope of inquiry into methodological issues of design, and the current state of the art. Hult, Irestig and Lundberg are concerned with enriching design practices in HCI. Their work is directed at enhancing the creativity of designers. They are investigating a semi-structured method for guiding design exploration, for ensuring that more diverse ideas enter into a design process.

Dearden and Finlay are concerned with ways to consolidate and reuse current best practices in design. Most basically, patterns are a defense against reinventing the wheel. But Dearden and Finlay are also sensitive to the potential hazards of codifying practices that themselves might entail unintended consequences. Patterns need and deserve a lot more work.

Visser is summarizing and attempting to integrate a veritable mountain of empirical and theoretical work. Some of this work has definitely been carried out without much benefit of alternative views. There is a need to make comprehensive sense of the whole. This work shows the possibility of moving from mere cumulation of concepts and results to a theory of design.

HCI design will continue to be a high priority topic in this journal and in the field. Hopefully, these three papers, and the very broad view of current research into the methodological foundations of HCI design that they convey, will help to inspire and to guide further research contributions. I look forward to helping to review some of these!

ARTICLES IN THIS SPECIAL ISSUE

Hult, L., Irestig, M., and Lundberg, J. (2006). Design perspectives. *Human-Computer Interaction, 21*, xxx-xxx.

Dearden, A., and Finlay, J. (2006). Pattern languages in HCI: A critical review. *Human-Computer Interaction, 21*, xxx-xxx.

Visser, W. (2006). Designing as construction of representations: A dynamic viewpoint in cognitive design research. *Human-Computer Interaction, 21*, xxx-xxx.