

CULTIVATING

an Interest in  
**DESIGN RESEARCH**



This introduction to a special issue, **Research in Communication Design**, provides a brief argument for why design research is important now. The importance and difference of design research needs from that of other disciplines is stressed. Development of knowledge useful in the practice of design is the focus. It also challenges the black box of design and questions the limits to its knowledge. Articles are briefly introduced with a commentary on their research classification and particular research approach.

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Several factors are converging that support and sustain a renewed interest in communication research, now from a design perspective. These factors can be divided into three categories: technological influences, contextual change and educational opportunity. ▶ **technology** Under technology, digital technology opens new access and research opportunities for communication as new media is still in an evolutionary state. At a basic level, technology provides access to all, with or without design training and experience. Novice communicators learn technique and operate by imitation and trial and error. Design is rule-driven to only a limited extent and at the limits of rule is judgment. This is where trouble begins for the novice. Access to technology by this group has put pressure on designers to perform with greater reliability, hence a greater interest in the findings of research. ▶ **contextual change** Under contextual change, information as a scarce commodity is replaced by its overabundance creating intense competition for human attention—rendering attention itself scarce. Interdisciplinary problem solving is accelerating, putting design principles, information and knowledge under scrutiny and pressure to be more explicit. To this is added the fact that communication performance is taken more seriously with penalties for failure. ▶ **educational opportunity** Under educational opportunity, doctoral programs in design open research training to those who were formerly practitioners. In research oriented doctoral programs, knowledge of what is known and what is unknown becomes clear, helping to identify where research is needed and when intuition and judgment must suffice.



## ▼ Individuals engaged in the construction of communications are faced with what is known and what is unknown in the context of their communication problem.

What knowledge can be accessed with regard to: their audience, the technological possibilities of media, usefulness of various communication strategies, the context of information use and the purposes of the user? What knowledge is available with regard to: interactivity or feedback possibilities, the usefulness, tension or complementarity between various coding systems (text and typography, diagrams, images, etc.)?

This questioning of what is known and what is unknown creates the arena in which research questions develop. Questions are powerful tools for locating a possible contribution to knowledge (Poggenpohl, 2000). By beginning with questions we can avoid methodological rigidity, attempt to balance logic and creativity and sustain active curiosity throughout a rigorous research process. Two articles submitted to this special issue from the University of Reading arrived with titles in the form of questions; this is common practice there.

Disciplines with strong research traditions, psychology and sociology for example, have long provided information to those engaged in design. The knowledge transfer has been both substantive and methodological. But the questions these disciplines ask and the manner in which they are answered are often difficult to interpret in terms of design action. Design is about action and projected change; it goes beyond problem investigation or description of a situation and into the synthesis of a solution. There is another problem in this translation process from social science research to design action as design works with many variables simultaneously and projected solutions are contextual and sometimes unpredictable. Nevertheless, many questions have been answered and the answers from the social sciences provide guidelines for design performance.

Now design is beginning to ask its particular questions as it participates in research development for its own discipline. In this issue and the continuation of this special issue in *Visible Language* 37.1, four authors are doctoral candidates in design and one has received a Ph.D. in Design. This is a new situation worth celebrating. Now not only is research in design more specifically possible, there are an increasing number of conferences in which to share research. The growth of the doctorate in design, its research training and performance, together with focused conference venues and peer-reviewed journals, will alter design education and practice. The current orientation in many design programs leans toward art. The change in view will reorient the balance by providing a more science-oriented counterpoint. Design is not science or art; it exists in the space between them and must be able to work across both boundaries.

Research is a social construction of knowledge. Researchers build upon each other's findings; they replicate studies; query each other and submit their findings to report, review and publication as part of the design research process. Research can be done in many ways depending on the question, the method and the desired character of the answer. The nature of research itself meets challenges and takes form according to whether the question under consideration opens new territory or extends previous work; is early in its particular development, a pilot study for example, or late; can use existing research methods or must develop a new strategy. A common categorization of research is into three classes: basic, applied and clinical. Basic research asks fundamental questions, the answer to which can be generally applied in many situations. Applied research may examine classes of clinical research in order to find patterns. For example, case studies in design are a recent phenomenon. They often are after-the-fact reports of success rather than critical records of development and its problems. Clinical research often is a single case of inquiry grounded in practice. Over time the experience of many single cases as experienced by a doctor or craftsman may lead to a principle or particular method. Clinical research in many fields and especially design is unreported as it is often proprietary.



▼ As the journal mission states,

*“The shift from page to screen is comparable in its significance to the shift from manuscript to print. Developing the knowledge base and conventions for this new media will take time and challenge our ability to move beyond the book into more fluid, relational and responsive systems of presentation.”*

The articles in this issue explore these ideas and cover some interesting territory in terms of their research approach.

The first contribution, **Methodology for Uncovering Motion Affordance in Interactive Media**, is basic research, searching for fundamental knowledge. The research method developed to uncover motion affordance is adapted from experimental psychology. The underlying research question addresses whether people attach common meanings to particular motions and whether these motions and meanings have any common emotional charge. It is interesting to observe that the increasing research interest in emotion (Damasio, 1999; Johnson, 1999) makes investigation respectable. This research challenges ordinary design practice in its intuitive use of motion on screen whether for navigation, cueing or other purpose. Based on a question of interest to the field of design, an entire research program can be developed from this work that will yield practical and beneficial results for creators and users of interactive media.

Likewise, the second contribution, **Methods for Manipulating Electronic Documents in Relation to Information Retrieval**, is also basic research, based on experimental psychology and developed from a design perspective. Navigation is a well documented problem in web design. This research builds from studies of reading in terms of efficiency in finding and using information. The particular focus of this study is to compare various structural properties of web navigation including scrolling, linking, paging or framing. Searching electronic text for specifics is certainly easier than scanning physical pages for a remembered text, or finding it through an index. But reading from screen presents the problem of accessing the text stream through a technical selection that may interrupt the rhythm and flow of reading for the reader. A disjointed and frustrating experience may result.

In complete contrast to the previous two articles, the third article, **Communicating Cuneiform**, is applied research of a very particular kind, directed to the development of a tool—a database. This research is based on analysis of the techniques of cuneiform scholarship, analysis of the technological possibilities and limitations of an on-line interactive, visual database, followed by construction of the tool itself. This process of research, based on analyses and heuristics, is practical and performance oriented because the final result must work. Various

domains of knowledge from esoteric and ancient to practical and contemporary, are increasingly organized into databases to facilitate search, comparison and manipulation of information. The charm of this research is the juxtaposition of ancient writing (cuneiform) with digital technology and the projected acceleration of analyses and understanding this supports. An estimated 100,000 known tablets remain untranslated (Vergano, 2002) with more possibly buried in ancient sites in Iraq. Not only cuneiform experts, but historians and anthropologists stand to benefit from these translations of the world's first legal code (Code of Hammurabi), tax receipts, medical prescriptions and religious practices. This can translate into a deeper understanding of our literate origins.


The last article, **Typographic Cueing on Screen**, is also based on studies of reading. Based on experimental psychology methods, it is basic research. Here the question is to what degree typographic cues facilitate comprehension, search and memory. While this has been extensively studied with regard to print, this study focuses on screen reading.

▼ Authors routinely cue important words or concepts in their text. Editors often use pull quotes not only as an attraction but to emphasize key content points. Designers sometimes try to open dense text to make it more accessible through various cueing systems. Whether these are effective ideas from the reader/user's perspective is at the heart of this research.

What sets research apart from a simple assertion is an analysis from substantial evidence. Gathering, analyzing and reporting results are expected. But perhaps it is necessary to help practitioners to use research by emphasizing the meaning and application of the findings. Research is done not for its own sake in design, but to help design practitioners and others make better constructions that have been found to be useful and enjoyable for people as they process information and communication.



Communication design is facing new challenges. More than ever, communicative performance is expected and valued. But since design happens in a situation of complexity, uncertainty and value conflict (Schön, 1983), the current situation of change complicates the process of building an understanding of what variables in the communicative process can be adequately accounted for and controlled and what variables are subject to control only through design judgment. Separating these into what is knowable in some more clear sense from what is subject to judgment requires design researchers and practitioners to become increasingly explicit in their understanding of design attributes and processes. In both education and practice, design has been based on implicit knowledge, learned through a master/apprentice model. Such knowledge is hard to specify, it is tacit (Polanyi, 1983), developed through imitation and internalized as a craft. Now there is a growing need for explicit knowledge that can be externalized through principles, formalized through educational process, subject to revision or extension through research. This design knowledge is constructed on past research and is arguable in terms of its process and findings.

To adequately address current and emergent communication problems with regard to globalization, technological developments or human information processing limitations requires an ability to ask good questions, perform research, interpret results and meaningfully communicate to practice. This is the agenda of the two special issues on Research in Communication Design. 

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