

DEVELOPING

Theory, Analysis and Effective Research Communication for **DESIGN**

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Research in Communication Design, part 2, departs from the usual reporting of research to dig deeper into issues of importance to research and its development by design. The need for a change in relationship between education, practice and research is discussed along with the practical need for better research dissemination. Theory, method and tool are discussed as possible frames for research activity. The articles in this special issue are introduced in terms of theory, post analysis and conceptual development in relation to research. The issue concludes with a practical argument for the need for research.

CONNECTING EDUCATION AND PRACTICE THROUGH RESEARCH

It may seem strange in a special issue on **Research in Communication Design** to reflect on the relationship between design education, design practice and research, but it is a necessary musing. Education and practice in design have long been estranged, due in no small part to its craft basis and the self-taught nature of many of the now retiring or just retired design professionals. For them the idea of an academic degree in design was foolish. However, since the middle of the twentieth century, design programs at universities have grown resulting in designers who have at least a bachelor degree. While a college education has become commonplace for those entering the practice of design, the relationship between education and practice has not become substantially more cordial. Educational programs today tend to be more diligent in preparing students for the technology that comprises the tools of their trade—employers demand this. Some more progressive practitioners value student experience with team work, multidisciplinary projects, user studies, even speculative thinking about not ready for primetime technology. Understanding something of human perception, aesthetics and communication strategy remains the price of admission to the field. Nevertheless the gulf between education and practice while somewhat diminished remains.

The communication context in which we now live is more complex as information is not scarce. It is unfiltered on the worldwide web, strains for our attention with annoying media tricks, evades our earnest search through engines now perverted by ratings derived from popular access and paid positioning of information. It is not only the physical format for information that has changed, it is also the institutional support and infrastructures that have changed.

The change in communication context opens new questions to which there are no easy answers. The transfer of information from one media to another has never been automatic. Different media afford different structures and opportunities, privilege information delivery and processing using different senses and codes. Altering information to take advantage of changed media affordance is an issue, while the largely untheorized and unstructured configuration of new media raises many questions. Practitioners are typically unable to address these questions as they require time and money that go beyond a quick, focused clinical research that is

designed for actionable results. Such research, when done, is not shared as there is no time or incentive for writing papers, even if the limited research is not proprietary. These very practical studies reveal the problems practice is addressing and this can lead to research questions that open the way to rigorous research, if these problems are communicated.

Educational institutions are just now waking up to their potential to do research as graduate programs begin to develop that are not remedial, not developed for those who failed to comprehend and develop design skill in their undergraduate programs. With the development of doctoral programs in design, the potential for communication design research expands and accelerates, but only if these programs understand research in a rigorous way.

A culture of design research needs to develop. This culture includes an ability to develop research questions that are answerable and lead to an actionable result. It requires an understanding of various research methods and how to apply them, an appreciation of the relation between question and answer through a quantitative, qualitative or comparative method. The ability to write a clear research paper, that accurately describes the research findings, the background, the previous research, the controversies and the challenges for the future, is an essential skill. Persistence is needed to get research results into the context of performance—to practitioners who will benefit from the research along with the end users of the applications in which the research is applied. This is a significant reorientation of advanced work in design education. Research may be the common ground where both education and practice find fruitful association. Research may be the bridge between education and practice.

Research does not happen effectively in a vacuum. Practitioners are seldom in a position to ask research questions that require extensive study, however, as mentioned, practitioners do uncover important questions that require research. These questions need to find their way to appropriate researchers for investigation so that knowledge develops. Answers to these questions need to be effectively disseminated and accessed for use by practitioners. Overly detailed and formal research papers do not resonate with those who daily practice design; these papers do not even reach them. This serious disconnect between research findings and their application needs to be addressed.

There is a difference between scholarly readers and those who read to apply findings to their work. Scholarly readers want to think critically with the researcher with a view to extending or challenging the work. As such they need research detail, a record of the thought and action behind the work. In contrast, the user of research wants the findings to interpret in the context of their own work. This is a different communication focus, perhaps calling for a compendium of results, edited by a reliable source for research credibility and with commentary explaining the extensibility or limitation of the findings.

At the Institute of Design, those engaged in working with doctoral students routinely ask their advisees whether they are developing a theory, a method or a tool. These are useful ways to locate a research activity that slices the general activity differently than that of basic, applied or clinical research as mentioned in part 1 of **Research in Communication Design** (*Visible Language*, 36.3).

Theory, method and tool are concerns internal to design as they aid design performance. These three terms relate to design as a verb; they are substantially different from history-theory-criticism. Even 'theory' as the middle term in this threesome, has a different cast. The latter examine design as a noun and from the perspective of an outsider. Theory, method and tool offer an insider's perspective and as concepts they are practical and measurable from a performance standpoint. Theory, method and tool are clearly related.

To develop a tool requires an understanding of the method with which the tool will be used, who will use it and for what purpose. This involves procedural knowledge that may need to be gained through research. This may also require accessing existing knowledge of human factors: the size of a fingertip (physical), the limit of short-term memory for discrete but unrelated information (cognitive), the possibility of collaborative use (social) or whether a procedure (reading direction for example) suits a particular population (culture). Tools are practical; they perform and can be evaluated. We can determine whether they work—or not—or how well they work.

A method requires analysis of alternative actions as strategies with regard to quality of result or examination of efficiency, steps collapsed, performed automatically or eliminated or in terms of quantity or complexity handled. Methods also are practical;

THEORY—
METHOD—TOOL

they enhance performance—or not. They provide a sense of location in a problem or solution development and they coordinate understanding and activity among team members. Deep knowledge of a method can lead to development of a tool.

Theory is the least respected of these three. Often thought to be nothing but hot air by cynics or held in too high an esteem by others, theory is an ordinary part of practice. It often goes without notice, yet even in its hidden state it functions. Without theory we would be amazingly inefficient as all things would need to be considered as new or unique. There would be no pattern of expectation. Theory is often based on analysis from extensive experience. It can be likened to current best practice, a pattern of reliable expectation or principle that has been subjected to empirical (often qualitative) research.

Of course there are big and little theories; those that come and go subject to changing discourse or whim. Then there are profound theories that spark new knowledge and change our view of the world. Theories exist on a continuum from conjecture to proven; they are subject to revision through question, research, comparison and reason.

THEORY

If method underpins tool, theory underpins method—but often the theory beneath the method goes unstated. In the context of research development for theory, method or tool it is important to be explicit. All of these assist the designer to reduce uncertainty and enhance the ability of the designer to address the specifics of the problem at hand. They support the designer in focusing on their problem rather than being diverted into long and sometimes unproductive consideration of how to address their problem. Theory—method—tool are action oriented perspectives on design research.

The four articles in this issue examine either particular aspects of thinking about deepening or extending a research study or the connection between research and practice.

The first article, **Designing Theory in Communication**, is a post-research analysis; it moves from a consideration of research results and method to reflection on theory. It examines the need for theory in communication research. R.K. Merton's theory of the middle ground is the starting point. Research based on either too high a level of abstraction or too fine a granularity is of little use in communication design practice. Based on communication research in the area of new media, this article examines

the theory that underpins empirical work and the validity and reliability of its results. The author suggests that the theory-method combination can be effectively used to investigate the structured relations between human cognitive capacity and dynamic representation in new media.

The second article, **Value-added Text**, explores the conceptual development of an idea that will be subject to future research. Research doesn't just happen, much investigation and conjecture go into formulating a research question or program. This is particularly true in an ill-formed discipline like design. Dealing with the problem of the impoverishment of email text and much formal text in general as compared to the nuances of spoken language, typography's affordances are seen as the enrichment mechanism. This article explores the possibility of a computer program that can enhance (add value to) text. Exploratory in nature, it searches for interdisciplinary connections among computer science, linguistics, design and practical human experience. It opens the path to formulating a research question. With an eye on practice, it examines the possibilities. But like many early stage research initiatives it seems too big, too inclusive as discussed here. The conceptual development points to meaning as a central concern. Can the meaning of value-added typographic coding be intuitively understood or will it be learned through exposure? How will the importance of context for meaning be handled? Many questions remain though a conceptual beginning is evident.

The third article, **User Analysis Framework**, is a post analysis investigation of previous research that involved observing users searching for targeted information on the web. Searching is an activity that is largely taken for granted, it is typically driven by various algorithms and linguistic analyses. Using Donald Norman's Seven Stages of Action to aid in the development of the Framework, the goal is a deeper analysis of information-seeking behaviors. This involves classification of cognitive factors and user characteristics as they intersect with search strategies already found through research.

If communication design is created to serve people's information needs, we need user models that account for human variation or similarity in cognition and

CONCEPTUAL DEVELOPMENT

POST RESEARCH ANALYSIS

experience so that we can better design alternative structures based on human ability and need. Post analyses are an attempt to deepen the research context in order to establish a subsequent research project or frame an entire research program. Research is best considered not as an isolated, one time activity. Rather it is best considered in a context in which some research questions precede others and the current research builds on previously answered questions or extends the enquiry into another domain for comparative purposes. Research is strengthened by links to previous work, by foregrounding controversy and debate, by taking a deep dive into connections and detail.

RESEARCH AND PRACTICE

The last article, **Get Real**, takes designers to task for desiring respect and recognition without developing the discipline that can not only provide the foundation for respect but can continually validate and expand design knowledge. Research is an important element in disciplinary development. Without research both disciplinary development and the enhancement of design practice are constrained to a slow trial and error process. Research questions often remain hidden in the vagaries of practice and all levels of education tend to emulate practice. In this article, the relation between research and practice is brought to a common understanding with an example. The problem of medicine labeling provides the opportunity to demonstrate how practical research can be and how directly it can inform practice.

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