Design Research : Towards a History

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Abstract
Various starting points might be selected for the origin of design research but this paper will begin with the design methods movement in Great Britain. Two of the leading figures in the movement were Bruce Archer and John Chris Jones. The original conference on design methods was held in London in 1962 and Jones published the first edition of *Design Methods: Seeds of Human Futures* in 1970. Archer was involved with the establishment of the Industrial Design Research Unit at the RCA in the early 1960s and was also a founder of the Design Research Society in 1976. The DRS journal *Design Studies* was founded three years later. Design methods in the United States continued to develop through the Design methods Group at the University of California, Berkeley in the late 1960s. Horst Rittel was a central figure in this group. In 1968 Herbert Simon gave the Compton Lectures at the Massachussetts Institute of Technology. These were published shortly thereafter as *The Sciences of the Artificial*, which became a seminal book in the field of design research. Another group on design methods, which included Donald Schön, also developed at MIT. In the fall of 1982, the academic design journal *Design Issues: History, Theory, Criticism* was founded at the University of Illinois, Chicago and the first issue was published in 1984. Among its activities, the editors organized the first conference on doctoral education in design, which was held at Ohio State University in 1968. During the 1990s, the international network of societies and associations involved with design research expanded to include organizations in Europe, Latin America, and Asia. The Design Research Society organized a series of international research conference and an organization that includes a number of research societies in Asia and Europe was formed. While there is much activity today, there is still a problem in connecting the various discourse communities into a more coherent field of activity.

Keywords
design research, design studies, design history

Introduction
Design research is today an international enterprise. Various starting points might be selected to mark its origin but I will begin with the design methods movement in Great Britain, simply because one can identify a trajectory from there to where many researchers are today. However, the field of design research is much broader than most researchers recognize and it encompasses diverse actors, quite a few of whom have little or no knowledge of what others are doing. Actually, the field consists of multiple discourse communities or networks, each of which pursues its interests based on its own criteria for best practice and meaningful results. These communities have diverse aims and are of different types. For some, the research objective is to create new products. For others, it is to gain a deeper understanding of design as a cultural phenomenon. Thus, we need to recognize that the term *design research* has different meanings, depending on who is using it.

I don't want to give the impression, however, that discourse communities have little or no contact with each other. On the contrary, they frequently overlap and sometimes even merge. Researchers often belong to several communities and move back and forth

between them. Journals, Internet sites, and conferences may originate within a particular community but often attract researchers from beyond the community's own ranks. In fact, it is through cross-pollination that a research field with multiple communities expands and produces results that transcend the more narrow interests of any given group.

Design methods in Britain
Two of the leading figures in the British design methods movement were Bruce Archer and John Chris Jones, both were engineers who became interested in design. They were among the organizers of the initial conference on design methods, which was held at the Imperial College in London in 1962. In 1970, Jones published the first edition of his seminal book *Design Methods: Seeds of Human Futures*, in which he introduced a number of methods that designers could use, mostly adapted from other fields. Two points about his choice of methods are salient. First, he wanted to enable designers to work at the higher levels of system and community design as well as at the level of products and components. And second, he intended to make the designer's methods transparent, changing the common belief that design arose from a black box of inspiration into an understanding that an articulated methodology could greatly assist the design process. Jones also plays a noteworthy role in the design methods movement for his rejection of it in 1977 when he declared that design methods had become too rigid (Bayazit, 2004). His defection was a major contributor to the demise of what Horst Rittel had earlier called "first generation design methods" (Bayazit, 2004, p. 21).

Bruce Archer was far more flexible than some of his colleagues in characterizing design as a practice that lay somewhere between science and art. In 1960 Tomás Maldonado invited him to join the faculty of the Hochschule für Gestaltung in Ulm, Germany, where he wanted Archer to mediate between several camps of faculty who had firmly set views about the nature of design. In 1962, Archer returned to England to head a research project at the Royal College of Art on the design of hospital equipment.

The establishment of the Industrial Design Research Unit at the RCA in the early 1960s with Archer as its head was a major step forward for design research. When the Design Research Unit became the Department of Design Research, it joined the school's other departments that trained graduate students. In a seminal article of 1981, published in the proceedings of the 1980 conference, *Design: Science: Method*, Archer provided an appendix with a long list of studies that had been carried out by students in the Department of Design Research (Archer, 1981). The range of studies was noteworthy for its emphasis on products for special users rather than on consumer goods as well as for the occasional attempts to deal with values, methodology and related issues. Most of the studies addressed the design of particular products – hospital equipment, products for physically disabled children, or police command and control consoles – but a few were more abstract such as the creation of mathematical modeling systems for use in design. A second appendix to Archer's article is also noteworthy because it lists the studies in related departments that focused on art and design history, design education, and graphic design (Archer, 1981). Though Archer did not go into detail about why he thought cultural studies were a valued component of design research, he nonetheless saw a relation between cultural research and design.

When the Design Research Society (DRS) was founded in 1976, with Archer as one of the original members, design methodology was a central concern as was the question of how to characterize design. Was it a science or something else that made use of

scientific methods? What made design knowledge unique and different from other kinds of knowledge? Questions of what constituted design knowledge, how could design be characterized as a discipline, and what exactly were designerly ways of knowing persisted at DRS conferences and were continued in *Design Studies*, the DRS journal that was founded in 1979.

Design methods in the United States
Interest in design methods spread to the United States where a Design Methods Group was established at the University of California, Berkeley, in 1967. Shortly thereafter, the group began to publish the *DMG (Design Methods Group) Newsletter*, which provided news about research and new publications in planning, architecture, and industrial design (Bayazit, 2004). The leading figure in this group was Horst Rittel, a German, who had been at the Hochschule für Gestaltung, Ulm before he was recruited to teach in the College of Environmental Design at the University of California, Berkeley in 1963. Other active members of the Design Methods Group were two professors of architecture, Christopher Alexander and Henry Sanoff,
Alexander remained at Berkeley for the rest of his career but Sanoff had left Berkeley by 1968, the year he co-founded the Environmental Design Research Association, whose aim was to promote research on the relation of individuals to the environment.

Rittel rejected the early design methods as too rigid and simplistic. Instead, he argued that designers frequently dealt with "wicked problems" which he characterized as being "ill-formulated" and " confusing" (Buchanan, 1992, p. 15). To replace the original methods, he proposed "second-generation design methods," that would more effectively deal with complex situations (Bayazit, 2004). Alexander took a more extreme position. In 1971, he stated that rationality as the design methods theorists espoused it, "had become a toolkit of rigid methods that obliged designers and planners to act like machines..." (Mitchell, 1993, p. 51). Subsequently, he withdrew from the movement.

In 1968, Herbert Simon, who wrote his doctorate on organizational decision-making but later contributed to many fields including artificial intelligence, and computer-modeling, was invited to give the Karl Taylor Compton Lectures at the Massachusetts Institute of Technology (MIT). As his title, he chose *The Sciences of the Artificial* and the book that ensued, came to denote his broad interest in design and his belief, similar to that of early design methods theorists, that rational analysis was the best method for approaching design problems. Within today's broad design research community, Simon is not well understood. He is mainly cited to justify the idea that design is not limited to a particular subject matter but can instead be broadly defined as a method of transforming existing situations into preferred ones (Simon, 1996). In fact, Simon, as a professor at Carnegie Mellon University, was involved in many areas of research that lie outside the boundaries of design as most researchers understand it.

In 1982, fourteen years after the Compton Lectures, a group of professors in the MIT School of Architecture and one from the School of Engineering founded the Design, Theory, and Methods Group. They included Louis Bucciarelli and Donald Schön, a philosopher who came to MIT in 1968 and became Ford Professor of Urban Studies and Education in 1972. The group also included Patrick Purcell, who had earlier collaborated with Bruce Archer at the RCA on a mathematical modeling system for design. Both Schön and Bucciarelli had an interest respectively in studying the working processes of architects (Schön) and engineers (Bucciarelli). In fact, Schön's book *The Reflective Practitioner: How Professionals Think in Action*, published in 1983, became a

foundational text for researchers who do phenomenological studies of how designers work.

Design Issues and the Ohio Conference
In the fall of 1982, the academic journal *Design Issues* was founded at the University of Illinois, Chicago and the first issue appeared in 1984. The five founders identified the themes of the journal as history, theory, and criticism, thus staking out a space in the field of design research that was not occupied by any other publication or discourse community at the time. The aim of the journal, as stated in the initial editorial was "to be provocative and raise controversial issues," rather than seek the foundations of a science or theory of design, The editors positioned *Design Issues* as "a journal of ideas that will embrace many forms from scholarship to polemics" (Margolin, 1984, p. 3). Their intent was to explore design as a broad part of culture rather than an enterprise with a particular theory or methodology. The journal's subject matter included both product design and graphic design and has continued to expand to cover new forms of practice such as interaction design and the design of aquariums and organizations. As the editorial policy evolved, the expression of pluralistic views became an explicit aim of *Design Issues*. The journal never sought to define itself as a scientific publication but rather its intent was to accommodate authors from numerous disciplines and practices.

Design education was always a welcome subject for *Design Issues* but the editors had never made a specific commitment to it as a special theme. In 1998, however, they organized a conference on doctoral education in design at Ohio State University. Participants came from almost twenty countries in North America, Europe, Latin America, the Middle East, and Asia. As Dennis Doordan noted in his introduction to the conference proceedings, "The Ohio Conference marked the end of an era of isolated efforts to provide doctoral level design education and the emergence of a vigorous international community of design educators" (Doordan, 1999, n.p.) Similar to the pluralistic editorial strategy of *Design Issues*, the combined papers did not represent a particular objective or point of view. Some reported on doctoral education in specific places; some discussed individual models or curricular content, and others tackled the difficult question of what constituted design knowledge. In his keynote address, Richard Buchanan, one of the *Design Issues* editors, noted that many design researchers were already pursuing multiple lines of investigation. "What is our task," he said, "is to understand the implications of such research, in its breadth, depth, and diversity, for shaping design as a legitimate field of inquiry" (Buchanan, 1999, p. 15). The implication of Buchanan's call was that no single definitional or methodological truth need be sought in design research but rather that useful knowledge would arise from an exposure to competing forms of inquiry and a consideration of their value for understanding and practicing design. Three subsequent conferences on doctoral education were held following the meeting in Ohio but after that discussions on the subject were absorbed into other events. One significant outcome of the conference was that two of the participants, David Durling and Keith Russell, founded the PhD-Design listserv, which has continued to function as a forum for discussion and debate on numerous topics.

Expanding the international network
Despite the burgeoning during the 1990s of societies and associations that addressed specific design activities such as interaction design, or software design, the Design Research Society maintained its identity as an organization whose membership embraced a broad range of interests. In 2002, the society organized *Common Ground*, a conference held near London that sought to involve researchers from some of the

discourse communities that previously had little contact with each other. While it did not attract many representatives from the technically oriented design networks nor did many design historians participate, the conference nevertheless created a forum for a diverse group of researchers. The thematic inclusiveness of *Common Ground* became a new conference format for the Design Research Society, which followed it with three subsequent biennial conferences: *Future Ground* in Brisbane (2004), *Wonder Ground* in Lisbon (2006), and *Undisciplined!* in Sheffield (2008) and the format continues with the current conference.

Another group that began to organize research conferences with broad themes was the European Academy of Design, which was founded in 1994. Its stated aim was to promote research collaboration within Europe and to foster the publication and dissemination of design research. Since it's founding the Academy has hosted biennial conferences in different European locations and in 1997 it initiated its own publication, *The Design Journal*. More recent groups of European design researchers are Die Deutsche Gesellschaft für Designtheorie und -forschung (DGTF) (German Society for Design Theory and Research), which has organized five annual conferences since its founding in 2003, the Swiss Design Network, which held its first conference in 2004, and the Nordic Design Research Network, which mounted its own initial conference the following year.

In Brazil, researchers have organized eight biennial international conferences on design research and development in design. Brazilian researchers have been active for many years with special emphases on semiotics, ergonomics, eco-design, and design history. Several research journals are also published in Brazil: *Arcos*, initiated at the Escola Superior de Desenho Industrial (ESDI) as a printed journal but edited now in digital form, *Revista Estudos em Design,* published in Rio de Janeiro by the Associação de Ensino de Design do Brazil (Brazilian Design Education Association), and *Revista Design em Foco*, edited at the Universidade do Estado da Bahia.

In Asia, the first design research organization was the Japanese Society for the Science of Design, which was founded in 1954, followed in 1978 by the Korean Society of Design Science and some years after that by the Chinese Institute of Design. In 2005, these three societies, joined by the Design Research Society and The Design Society, an international group that originated in the Federal Republic of Germany, formed the International Association of Societies of Design Research, which thus far has held two conferences, the first at the National Yunlin University in Taiwan, the year the association was founded, and the second two years later at the Hong Kong Politechnic University. A third was held in October 2009 in Seoul, Korea.

This proliferation of design societies and conferences is markedly different from the aims that motivated the first design methods researchers. Design research, particularly as it is now ensconced within universities, has become an activity that is independent of any preordained purpose. This is valuable in the sense that the potential for a vibrant field exists but the danger lies in the possible absence of a clear sense of what such research is intended to accomplish. While there is no single goal for design researchers nor should there be, the aims of design research in the basic sense are to improve the quality of products and to reflect on the transformation of design practice while at the same time contributing to a greater understanding of design as a social phenomenon.

Conclusion

There is much that I have left out in this paper but to document the history of design research in a more complete way would require a book at least. Discourse communities related to artificial intelligence, design cognition, human/computer interaction, sustainable design, design for development and science, technology & society studies are active and regularly convene conferences and produce volumes of proceedings while research organizations such as Bell Labs, Xerox PARC, Microsoft, Google, and the AgeLab and Media Lab at MIT continue to transform technology into new products.

These new developments are evidence of how much design, design education, and design research have changed since the founding of the Japanese Society for the Science of Design in 1954 and the beginning of the design methods movement at the start of the 1960s. The rapid expansion of doctoral programs in design has created the need for a discourse community or communities that can publish and disseminate a growing volume of research. Thus far, some of this research has contributed to the development of new design practices such as interaction design, sustainable design, medical design, service design, organization design, universal design, and design for development. That is its positive side. It is also true that design research is not always directed towards shared questions or problems and consequently it attracts moderate interest and makes little or no impact on the field..

The problem with the disconnect between discourse communities is that much design that occurs today is highly technical and as it is configured into large systems it has a significant impact on our lives. We need more research to help us understand these systems. New connections need to be made between researchers who study design's meaning in the past, present, and potentially in the future and those who are doing the research that is generating new and unprecedented products.

Bruce Archer was prescient in recognizing the relation between two kinds of research, one directly related to making things and the other concerned with understanding not only things themselves but the milieu in which they are conceived, made, and used. The comprehensive taxonomy of design research that he outlined in his article "A View of the Nature of Design Research," in 1981 may not be the one we would adopt today but the sense of wholeness that it represented is something that we need to recapture. Archer was concerned with the practice (praxiology, modeling, technology, and metrics), understanding (history, taxonomy, axiology, philosophy, and epistemology), and teaching. We would do well to reclaim Archer's broad vision of design research and move it forward with contemporary methods, themes, and purposes.

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