

Design practices in design thinking

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Abstract

Management and organization scholars interested in design typically draw on Simon's (1969/1996) distinction between science and design. Scholars, educators and practitioners proposing that managers adopt "design thinking" often describe the practices of professional designers, but neglect the studies of designers' activities in design studies. For its part, that tradition has paid little attention to the practice turn in contemporary social theory and the role of non-designers in constituting designs during consumption. This paper contributes to discussions about the value of the ways designers do things by using the practice perspective to attend to what constitutes design practice. Drawing together these traditions – studies of what designers do within design studies, and practice theory within organization studies – a pair of concepts is proposed: "design-as-practice" and "designs-in-practice". Using this pair offers a way to move beyond discussions of individual designers and acknowledge the work done by others in constituting designs.

Key words

Design thinking, design, practice, design-as-practice, designs-in-practice

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Introduction

That the ways designers go about thinking and doing things is of relevance to managers is not a new idea. Accounts of “design thinking” (Buchanan, 1992; Dunne & Martin, 2006), “designerly ways of knowing” (Cross, 2006) and “design attitude” (Boland & Collopy, 2004) typically draw on Herbert Simon’s (1969/1996) assertion that design is an activity undertaken by many professionals:

Everyone designs who devises courses of action aimed at changing existing situations into preferred ones. . . . Schools of engineering, as well as schools of architecture, business, education, law, and medicine, are all centrally concerned with the process of design. (Simon, 1996, p. 111)

Simon contrasts his notion of design as concerned with the artificial, against the sciences, as concerned with the natural world. It has been particularly influential in computer science and in engineering design, leading to a characterization of design as a rational, problem-solving activity. This notion of design can be found in management and organization studies too. In strategy, for example, the design school is the name Mintzberg (1990) gave to the approach that emphasizes the conscious activity of conceiving of strategic alternatives. Over the years Simon’s view of design has received several significant challenges, including the idea of “wicked” or unstructured problems (Rittel, 1972; Rittel & Weber, 1973), and the work of Donald Schön (1983/1987) whose studies of how professionals approached framing and solving problems argued against a linear, technical approach to problem solving. The differences between Simon, on the one hand, and Rittel and Schön, on the other, create an important and fundamental dialectic in theories of design (Dorst & Dijkhuis, 1995). In recent years terms such as “design thinking” have started appearing within management journals (eg Brown, 2008) and discussions of management practice and education (eg Bolland & Collopy, 2004; Dunne & Martin, 2006) have called for managers to be (more) like designers. Design – the argument goes – has something to offer managers and scholars of management and organizations.

These accounts of design thinking or design attitude often hinge on descriptions of the ways designers *do* things. Bolland & Collopy (2004) describe their experience of working with architect Frank Gehry during the design of a new building for their business school. In a striking story, they relate how, having spent two days with others revising the arrangement of space, the project architect Matt Fineout tears up the plans they have just agreed on and suggests they start again, now they know they can solve the problem (Cameron, 2003, p. 92; Bolland & Collopy, 2004, p. 5). This is an emblematic story of what the authors call “design attitude”. But it can also be read as an account of design practice. Even in this short description Bolland and Collopy draw our attention to the embodied, shared experience of working around a table on sheets of onionskin, making marks, and iteratively framing and solving problems using the routines of architects.

Practitioner accounts of design thinking (Brown, 2008; cf Kelley, 2001) also describe practices with passionate arguments about the value of their approach to organizations seeking to innovate. But the now well-established practice

perspective in social theory has not, as yet, received significant attention in accounts of design and designers. Scholars find it hard to talk about design without describing what designers do, how they do it, how they make sense of it and the shared routines that give their practices meaning. Yet practice theory, which has been fruitful in other areas of management enquiry from strategy to accounting, has yet to be applied here.

This paper contributes to discussions about the distinctive ways that designers go about doing design – what some writers call design thinking – by drawing on resources in practice theory to attend to what designers do and, in particular, the nexus of minds, bodies, objects, discourses, knowledge, structures/processes and agency, that together constitute practices (Reckwitz, 2002). An important additional insight that practice theory offers is that design is constituted both by designers and by non-designers through their consumption of and engagement with the outcomes of designing.

The paper has four parts. First, it reviews approaches to studying design including the design studies tradition and science and technology studies. Then it introduces the practice perspective in recent social theory. The next step is exploring applications of the practice perspective to organization studies. Finally it becomes possible to conceive of “design-as-practice” and “designs-in-practice” as a way of understanding what is distinctive about what designers do and what happens to designs once they are in use. Finally, the paper ends with a discussion of the implications of the practice perspective for research in management and design.

Studying design and designers

After some 40 years of studies of design, there is a substantial body of knowledge about professional design and designers although much of it is unfamiliar to scholars of management and organization studies. Two German educational institutions, the Bauhaus school operating from 1919-1933 and the Hochschule für Gestaltung Ulm in the 1960s, had a particular influence on design education, practice and research, influencing gatherings of researchers and practitioners from the 1960s onwards (Buchanan, 1992; Buchanan 1995). Within this community of researchers, the focus of study ranges from design methods, processes and contexts for design (Buchanan & Margolin, 1995; Cross, 2006) to a more recent discussion about human-centred design (Krippendorff, 2006). Studies of design typically draw on Simon, Rittel and Schön for the contributions cited above. The argument between the rational problem-solving approach to design (eg Simon, 1996) or the constructivist approach of problem-framing (eg Schön, 1983) is unlikely to be won by either side. Design can be construed as a rational problem-solving process when problems are well-defined but when problems are ill-defined, design is better described as reflection-in-action (Dorst & Dijkhuis, 1995).

There remains a lack of clarity about what goes on in the professional activities of design, so too, the term “design thinking” is not well defined. Key papers developing this idea include Buchanan (1992) and work by Cross (2006), who also uses the term “designerly ways of knowing”. Much of this research effort has gone to study the content and process of designers’ activities, for example through

protocol studies in which designers are observed as they undertake a design task in a laboratory setting offering observers insights into designers' cognition (eg Dorst & Cross, 2001; Dorst & Dijkhuis, 1995). Designers are seen to tackle ill-defined or indeterminate problems (Buchanan, 1992; Cross, 2006). They are solution-focussed (Cross, 2006). Their mode of thinking is constructive or generative (Cross, 2006), integrating ideas into new solutions (Buchanan, 1992). Designers can apply themselves not just to the design of things (eg consumer products in modern, industrialized economies) but rather to designing signs, things, actions and thought (Buchanan, 1992), a generalisable "design thinking" that can be applied to any problem.

Research in this tradition has neglected some key developments in social theory (Ingram et al, 2007). Typically undertaken by scholars within design and engineering schools, but not in social science departments, design research within this tradition has sought to find ways to demonstrate rigour without "swamping our design research with different cultures imported from either the sciences or the arts" (Cross, 2006, p. 100). Insights from disciplines such as sociology and anthropology, which study what happens to artefacts during consumption, once designers' work is finished, are rarely present (Shove et al., 2007). Ingram et al. (2007) argue that scholars of design would benefit from attending to social theories including ideas about objects and their relation to practices.

Management journals grounded in the social sciences have not paid significant attention to design although some scholars have sought to take forward Simon's (1969/1996) idea of design sciences in relation to problems within organizational practice and theory (eg Romme, 2003; van Aken, 2005; Huff et al., 2006; Mohrman, 2007; Jelinek et al., 2008). Drawing in part on theories of design, and partly on organization studies literature, scholars writing in management contexts have sought to articulate a design approach that is of value to managers (eg Weick, 2003). For Boland and Collopy (2004), what makes design of value is not just cognition but a "design attitude" to problem framing and problem solving. Combining ideas from Simon (1996) and Schön (1987), they propose that managers are designers as well as decision makers. In their project to adopt and adapt designing as a way of rethinking managing, Boland and Collopy propose that the value of this to managers is a willingness to approach projects with a desire to do things differently, enabling managers to create new possibilities rather than just selecting between alternatives. A design attitude can complement the decision attitude which, they argue, is routinely taught in management education.

Similarly, for Roger Martin (Dunne & Martin, 2006), design thinking offers something of value to managers, which can complement analytical techniques. Martin (Dunne & Martin, 2006) sees design thinking as combining inductive, deductive as well as abductive reasoning and argues that managers are ill-served by contemporary management education which neglects the latter. Drawing attention to the different ways that managers and designers judge reliability and validity, Martin (2005) points to some of the fundamental challenges facing those who would import designerly approaches to management.

Taking forward Boland and Collopy's ideas in an empirical study of design attitude, Michlewski's (2008) analysis of interviews with 14 designers in

recognised design organizations including consultancies and manufacturers produced five concepts that he found were part of design culture in organizations. They are: consolidating multidimensional meanings; creating, bringing to life; embracing discontinuity and open-endedness; embracing personal and commercial empathy; and engaging polysensorial aesthetics. Such studies offer scholars in management studies a sense of the distinctive contributions of designers to organizational problems, but the terms “design thinking” or “design attitude” remain not well defined.

There have also been studies of design and engineering in other fields. Science and technology studies, for example, has produced rich, empirical descriptions of the development of technologies and the role of engineers and engineering designers (eg Callon, 1987; Henderson, 1999). Molotch (2003) situated design practices within a context of production and consumption that showed how “stuff” is connected to other “stuff” in homes, work places, and the wider world. But within this tradition, the object of study has often been the technologies, rather than the designers. There are have been few studies of product designers or other professional designers educated in art schools and working outside the engineering tradition (Shove et al., 2007).

What is available, then, are accounts of design methods, processes and the contexts of design that focus on designers and neglect developments in social theory such as studies of consumption, or descriptions of the design of technologies, for example, without significant attention being paid to the role of designers in shaping or giving form to them. At stake in both is what designers actually do and what others do in constituting design outcomes. It is therefore worthwhile exploring in some detail the theoretical perspectives concerned with practices, which may help with understanding the distinctive contributions that designers can make – whether this is called “design thinking” or something else.

The turn to practice

The practice turn in contemporary social theory replaces as units of analysis individuals and society (Reckwitz, 2002), or individuals and organizations (Whittington, 2006), with practices. Examples of this perspective within organization studies include studying technology use (eg Orlikowski, 2000); strategizing (eg Whittington, 1996); and knowledge in organizations (eg Brown and Duguid, 2001).

The variety of approaches in this area, drawing on key figures in twentieth century social theory, including Bourdieu (1990), Giddens (1984) and Schatzki et al (2001), mean that practice perspectives are not necessarily coherent with one another (Reckwitz, 2002). This paper follows Reckwitz in his definition of an ideal type of practice theory in which practice is understood as “a routinized type of behaviour which consists of several elements, interconnected to one another: forms of bodily activities, forms of mental activities, ‘things’ and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge” (Reckwitz, 2002, p. 249). Practices involve bodies, minds, things, knowledge, discourse, structure/process and agency and, importantly, cannot be considered by taking one of these elements in isolation. For

the purposes of this discussion of design thinking, two aspects of practice theory are emphasized. The first is the attention paid to the role of objects in constituting practices, and the second is the way knowledge is construed.

An important aspect of the practice turn is the emphasis on the role of artefacts in constituting practices, drawing in particular on science and technology studies and actor-network theory (Latour and Woolgar, 1986; Law, 1987; Callon, 1987; Latour, 2005) which conceive of both humans and non-humans as actors. This symmetry of analysis, which allows objects as well as humans to have agency, is controversial when viewed through the lens of classical sociological theory. As Reckwitz describes: “For practice theory, objects are necessary components of many practices – just as indispensable as bodily and mental activities. Carrying out a practice very often means using particular things in a certain way” (Reckwitz, 2002, p. 252). Paying attention to objects, be they objects in the natural world, instruments, or objects produced within a knowledge practice is for Knorr Cetina (2001) a way of making a distinction between a definition of practice as rule-based routines or embodied skills, and a notion of practice that is “more dynamic, creative and constructive” (Knorr Cetina, 2001, p. 187).

The second aspect of practice theory that will be emphasized here, is knowledge. This, of course, has been studied in many different ways in management and organization studies. The particular contribution of the practice perspective is to avoid the alternatives presented in other theories that focus exclusively on what goes on in people’s minds, or at the level of social norms, or what goes on in language, for example. In theories of practice, knowledge is a social accomplishment situated in the ongoing routines of bodily and mental activities. As Schatzki (2001) explains:

“The prioritization of practices over mind brings with it a transformed conception of knowledge. As indicated, knowledge (and truth) are no longer automatically self-transparent possessions of minds. Rather, knowledge and truth, including scientific versions, are mediated both by interactions between people and by arrangements in the world. Often, consequently, knowledge is no longer even the property of individuals, but instead a feature of groups, together with their material setups” (Schatzki, 2001, p. 12).

In their discussion of knowledge in organizations, Brown and Duguid (2001) remind us that Polyani’s (1966) terms “tacit” and “explicit”, and Ryle’s (1949) “know how” and “know that” are dimensions, not types, of knowledge. “They are interdependent and cannot be reduced to one another. ... In both of these well known arguments, then, knowledge is two-dimensional and practice underpins its successful circulation.” (Brown & Duguid, 2001, p. 204)

The implication for scholars or educators making claims about design thinking is that, viewed from a practice perspective, it may be tricky to separate the artefacts used or created by designers (or managers-as-designers) such as sketchbooks and sketches, from their practices. Can product designers design without making sketches? Can architects design without making models? And can it possible to conceive of design thinking without attending to these artefacts and what they do? Further, it becomes hard to talk about the distinctive knowledge of designers

without these objects, just as it is hard to talk about design knowledge without the mental activities and the bodily activities of designers.

The practice perspective has not yet made much of an appearance in design research but there have been some steps in this direction. Margolin (1995) proposed that designers and scholars of design shift attention from products to what he called the “product milieu” and pay more attention to the relations between design and social action. Within participatory design and the studies of computer-based systems, there has been a close attention to users’ situated practices drawing on traditions within ethnography (eg Kensing & Blomberg, 1998; Squires & Byrne, 2002). Combining consumption theory with studies of science and technology, Shove et al. (2007) argued that innovation in products often requires innovation in practices, calling for a “Practice Oriented Product Design”. Elsewhere, challenging what he calls the “ocularcentricism” in studies of visual culture, Julier (2006, p. 66) also emphasized the neglect of theories of consumption in design studies, proposing instead a more mobile design culture as a field of study that is at the intersection of value, circulation and practice. Orlikowski (2004) stressed the importance of attending to enactment and reflexivity in the project of re-imagining managing as designing.

Having outlined aspects of the practice turn in social theory relevant to design thinking, the next section considers applications of practice theory to research within organization studies. By looking in some detail at these accounts of practices in studies of organizations, concepts relevant to design thinking are identified.

Applying the practice lens to organization studies

The emphasis on practices as a way of studying organizations has been explored in several fields. Examples include studying technology use (Orlikowski, 2000), strategizing (Whittington, 1996; Whittington, 2006); accounting (Hopwood & Miller, 2004); service innovation (Dougherty, 2004); and knowledge in organizations (Brown & Duguid, 2001; Whyte et al., 2008). Contemporary management conferences have tracks that explore strategy as practice and marketing as practice (EURAM, 2009). For the purposes of this paper concerned with design thinking, three of these approaches will be discussed in more detail.

The first is “strategy-as-practice” (Whittington, 1996; Whittington, 2006) which focuses attention on the practices and craft skills of strategising, in contrast to theories of strategy that are based in economics. In their ten case studies of strategic reorganizations Whittington et al (2006) analyzed strategy practices. Firstly, they found that approaching strategy and organisation as interlinked and practical activities was more effective than traditional static and detached approaches that privilege analysis. Secondly, they drew attention to what they call “the importance of practical ‘craft’ as much as analytical ‘science’” (Whittington et al, 2006, p. 616). Thirdly, they emphasized the deliberate use of symbolic artefacts for communicating strategic change. Part of the significance of the move to theorizing strategy-as-practice is that it enables researchers to bridge the gaps between theories of strategy and organizational performance viewed from intra- and extra-organizational levels.

A second example is a study of how technologies are developed and used in organizations. In her study of Lotus Notes, Orlikowski (2000) showed how technologies are constituted in different ways by users' practices. She found that as they interact with a technology in their ongoing practices, people enact structures which shape the emergent and situated use of that technology. She found that "technology-in-practice" can vary considerably in the ways structures are routinely encoded. "When people use a technology, they draw on the properties comprising the technological artifact, those provided by its constituent materiality, those inscribed by the designers, and those added on through previous interactions" (Orlikowski, 2000, p. 410). The contribution of this study is to show that structures are not located in organizations, or in technology, but are enacted by users in practice.

A third example draws on studies of visualisation in knowledge practices in organizations (Henderson, 1999; Ewenstein and Whyte, 2007; Whyte et al, 2008). Aesthetic knowledge is part of the embodied work that people do. It is not only the symbolic context for work, but also is an integral part of the work that they do (Ewenstein and Whyte, 2007). In their studies of project teams in two organizations, Whyte et al (2008) found that visual artefacts played different roles at different points in projects. They found that during exploration, when dealing with relatively unstructured problems, visual methods such as sketching and whiteboard diagrams allowed the structure of problems to be discussed, in contrast to during exploitation phases, dealing with relatively well-structured problems, when representations of process and the commercial context were more common. The implication is that visual artefacts which constitute part of the practices of designers and others, play important roles in knowledge work. Visual practices do different things at different times and become useful in different ways.

Space does not allow for a full discussion of each of these contributions, but it is proposed that these studies offer resources for understanding design practice. The main points that emerge are:

- The importance of the shift in the unit of analysis away from either individuals (eg designers), or society or organizations (eg design consultancies or teams), to practices;
- The idea that structures in technology are not fixed but emergent, and that technology should be conceived of as technology-in-practice, where different practices constitute the technology in different ways;
- The work that artefacts do as part of constituting practices and the importance of visual practices which play roles in knowledge work in different ways.

Having considered the application of the practice perspective to empirical studies of organizations, the paper now turns to the question of design thinking. There are, of course, difficulties with such a proposal. The studies cited above were each context-specific and make no claims for their findings to generalisability to other domains of research. The organizations in which Whittington et al (2006), for example, conducted their research were undergoing strategic reorganization. The organizations implementing Lotus Notes studied by Orlikowski (2000) were different again. The studies of visual practices by Ewenstein and Whyte (2007)

and Whyte et al (2008) included an architectural firm, where one might expect visual practices to be more valued and visible than in other kinds of organization. However for the purposes of this paper, which seeks to add a practice perspective to notions of design – itself a subject of research in widely differing domains – it may be useful to mobilize the concepts generated in the studies described above to consider implications for design in organizational contexts.

Design-as-practice and designs-in-practice

Returning to accounts of design thinking, the question now posed is what might the concepts identified above, resulting from applying the practice perspective to other aspects of organizational theory, offer to scholars of design practices in organizations? Two concepts are proposed, which draw on the literatures discussed above, combining the empirical studies of practices with studies of design. Readers are invited to see this pair of concepts as a *sketch*, using terminology and practices from design, rather than social science. Conceived of as a sketch, the ideas that follow are understood as tentative, not fully thought through, but nonetheless may offer ways to reframe the problem as Schön (1983) describes.

The first idea is perhaps an obvious move, to conceive of “design-as-practice”. If descriptions of design thinking rely on accounts of what designers do, what goes on (as far as we know) in their minds, in their shared, embodied and situated routines, and cannot be completed without involving the artefacts they use, make and work with, how does it make sense not to use the resources offered by practice theory? Design-as-practice mobilizes a way of thinking about the work of designing that acknowledges that design practices are habitual, possibly rule-governed, often shared, routinized, conscious or unconscious, and that they are embodied and situated. Design-as-practice cannot conceive of designing (the verb) without the artefacts that are created and used by the bodies and minds of people doing design. This way of thinking of design sees it as a situated accomplishment in which a number of things, people, and their doings and sayings, are implicated. As with strategy-as-practice (Whittington, 1996), conceiving of design-as-practice offers rich resources for understanding what goes on during design activities and relating them to organizational outcomes. It moves the unit of analysis and thus the research agenda away from oppositions between individual skill or knowing (eg Cross, 2006), or organizational competence (eg Kelley, 2001) to an arena which acknowledges the practices which span both.

The second idea is of “designs-in-practice”. Like Orlikowski’s (2000) technologies-in-practice, this term acknowledges the emergent nature of design outcomes as they are enacted in practice. Taking the plural noun form of “design” which can mean the outputs created during a process of designing, such as blueprints, models, specifications and what is finally assembled in products and services, the term designs-in-practice draws attention to the impossibility of there being a singular design. These designs-in-practice are the result of visual practices which, as Whyte et al (2008) showed, become useful in different ways depending on what a team in an organization, or working across organizational boundaries, is doing. But it not sufficient to study what the designers and others involved in the designing process think and say and do. Drawing on consumption theory as

deployed in Ingram et al (2007), the idea of designs-in-practice foregrounds the incomplete nature of the process and outcomes of designing (Garud et al 2008). When the designers have finished their work, and the engineers and manufacturers have finished theirs, and the marketers and retailers have finished theirs, and the customer or end user has taken engaged with a product or service artefact, the work of design is still not over. Through their engagement with a product or service, the user or stakeholder continues to be involved in constituting what the design is. Designs (the noun) are constituted through the practices of both professional designers, and many others.

As a pair, design-as-practice and designs-in-practice serve to ground the practices of designers, their methods, processes, skills, knowledge, ways of knowing, ways of doing, and shared routines, within the bodies they use to do their work, their minds, and the contexts in which they practice, and connect them with the objects that are implicated in it, and, crucially, to the practices of stakeholders and others producing outcomes of design in the world, which are outcomes that must remain incomplete. As an alternative to design thinking, the pairing of design-as-practice and designs-in-practice moves the unit of analysis away from the individual designer or user, or the organization, to a wider frame which refocuses the research agenda. The possible implications of this are now discussed.

Discussion

Earlier, the origins of theories of design thinking in Herbert Simon's work were pointed to, with the attendant critiques by Rittel (1972) and Schön (1983). For many scholars, especially those working within European organization studies after the 1960s and 1970s (March, 2007), the deterministic nature of Simon's argument is unappealing and unpersuasive since it fails to acknowledge the contingencies of the social. However *The Sciences of the Artificial* (Simon, 1969/1996) marks out an important intellectual agenda that acknowledges the importance of the activity of designing, which has so far not been taken up significantly within management studies.

It may be of value to go beyond the incommensurability of these two positions. Simon's rational vision of design as the science of the artificial conflicts with social theories that serve to situate his ideas within the messy realities which most of us are familiar with as organizations. Schön's description of individual, professional practices, which offers a valuable account of what people do, focuses on the minds of practitioners to the exclusion of other agencies which play a role in constituting practices. Practice theories offer an alternative by switching the unit of analysis from a choice between individuals *or* society, to a messy, contingent, iterative combination of minds, things, bodies, structures, processes and agencies, and the configuring and reconfiguring of and between them.

As with other social theories that see abstractions as situated accomplishments in which the connections between things can be traced, the practice perspective is necessarily empirical and theoretical. In order to see the connections between design-as-practice and designs-in-practice, researchers must go and look for them. This paper is therefore a sketch, which may contribute to the design of such a programme.

Conclusion

The terms design thinking and design attitude are increasingly appearing in the pages of management and organization journals, not just those journals and papers concerned with design. Reading these accounts, it is hard to conceive of design without attending to practice. This paper has contributed to scholarship about the ways designers think and go about their work, by drawing on intellectual resources based in social theories of practices. Firstly, it explored approaches to studies of design, both in the design studies tradition and within science and technology studies. The next step was then to investigate the “practice turn” in social theory whose unit of enquiry is not individuals at one extreme, or societies (or organizations) at the other, but practices. Drawing on an ideal type of practice theory outlined by Reckwitz (2002), the paper then focussed on two aspects of practices, the roles of objects in constituting them, and the ways practice theories conceive of knowledge. Then, applications of the practice perspective to organization studies were discussed, with a particular focus on three areas of enquiry: strategy-as-practice, studies of technologies-in-practice, and the visual practices in knowledge work. Combining these approaches – studies of design, and the practice perspective in organization studies – a pair of concepts was proposed: “design-as-practice” and “designs-in-practice”. These were generated as a way of understanding what is distinctive about what designers do but viewing it as a social accomplishment in which bodies, minds, objects, agency, process, structure and knowledge are all implicated, and linking what designers do with what users do in their practices. Finally, the paper closed with a discussion of the implications of the practice perspective for research in management and design.

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