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Design practices in design thinking
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Abstract

Descriptions of design thinking, designerly ways of knowing, or design attitude, often describe practices, but literature within the design studies tradition has paid little attention to the practice turn in contemporary theory. This paper contributes to discussions about design thinking by using theoretical practice perspectives to attend to what constitutes design practices. Two aspects of practice theories are discussed: the role of objects in constituting practices, and how knowledge is understood. Three studies of organizations in which a practice lens has been applied are discussed, which introduce ideas of "strategy-as-practice", "technologies-in-practice" and the role of visual practices in constituting knowledge. Drawing together these two traditions –practice theories within organization studies, and design studies – a pair of concepts is proposed: "design-as-practice" and "designs-in-practice" which combine insights from previous organizational research analysed using practice theory. Finally, implications for research in management and design are discussed.

Key words: practice, design thinking, design-as-practice, designs-in-practice

Introduction

That the ways designers go about doing things is of relevance to management is not a new idea. Theoretical accounts of design thinking (Buchanan 1992; Dunne and Martin 2006), designerly ways of knowing (Cross 2006) and design attitude (Boland and Collopy 2004; Michlewski 2008) typically draw on Herbert Simon's (1996) assertion that design is an activity shared 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: 111)

In addition to Simon, other key references in theories of design are "wicked" or unstructured problems (Rittel and Weber 1973), and the work of Schön (1987) in studying professional approaches to framing and solving problems.

These accounts often hinge on descriptions of the ways designers *do* things. Boland and 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. 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 Boland 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 and its relation to innovation (Brown 2008; Kelley 2001) also describe practices with passionate, persuasive arguments about the value of their approach. But the now well-established practice perspective in social theory has not, as yet, received significant attention in accounts of design and designers. Writers 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).

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. 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. These enquiries have developed from the Design Methods movement to studies of processes and contexts for design (eg Buchanan and Margolin 1995) and, more recently, arguing for a semantic turn in understanding design (Krippendorff 2006). Journals such as *Design Studies* and *Design Issues* have helped to formalise a field of enquiry that brings together researchers interested in design, broadly conceived, applying to it research methodologies that result in reliable knowledge about design. Research in this tradition, although it has focussed on design methods and design processes, has neglected some key developments in social theory (Ingram et al 2007). Ingram et al (2007) argue that scholars of design would benefit from attending to some of the theories about objects and their relation to practices suggesting these themes: acquisition, scripting, appropriation, assembly, normalization, and practice.

Management journals grounded in the social sciences pay less attention to design although recent special issues have sought to capture knowledge about designing and take forward Simon's (1996) idea of design sciences in relation to problems within organization practice and theory[i]. In a recent study of design attitude, for example, 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 help scholars in management studies a sense of the distinctive contributions of designers to organizational problems. But accounts of design attitude, or design thinking, or designerly ways of knowing, may reach a wider audience outside of design scholarship if they consider theories of organizations which may be relevant.

There have also been studies of design and engineering in other fields. Science and technology studies, for example, have produced rich, often ethnographic 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, there are have been few studies of product or other designers educated in art schools and working outside the engineering tradition.

What is available, then, are accounts of design methods, processes and the contexts of design that neglect developments in social and organizational theory, 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. It is therefore worthwhile to explore in some detail the theoretical perspectives

concerned with practices, which may help with understanding the distinctive contributions that designers can make to innovation – whether it 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 (Orlikowski 2000); strategizing (Whittington 1996); and knowledge in organizations (Brown and Duguid 2001).

The variety of approaches in this area, drawing on key figures in twentieth century social theory, including Bourdieu, Foucault and Giddens, 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: 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 will be 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, but has proved fruitful in studies of science and technology. 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: 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: 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

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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: 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 and Duguid 2001: 204)

The implication for scholars 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. 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 "ocularcentralism" in studies of visual culture, Julier (2006: 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, it is hoped that concepts relevant to design thinking may emerge.

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 and Miller 2004); service innovation (Dougherty 2004); and knowledge in organizations (Brown and Duguid 2001; Whyte et al 2008). The EURAM 2009 conference, for example, has two tracks that explore these ideas: strategy as practice (an established area of study), and marketing as practice (a new one). 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 relevant to design thinking. Firstly, they argue that approaching strategy and organisation as interlinked and practical activities is more effective than traditional static and detached approaches that privilege analysis. Secondly, they draw attention to what they call "the importance of practical 'craft' as much as analytical 'science'" (Whittington et al 2006: 616). Thirdly, they emphasize 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 used a practice lens to examine how people, as they interact with a technology in their ongoing practices, 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: 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. What is central, however, is that artefacts created by visual practices become useful in different ways.

While space does not allow for a full discussion of each of these contributions, it is necessary to reflect on the implications of these studies for understanding design thinking through the lens of theories of 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.

Having considered the application of the practice perspective to empirical studies of organizations, the paper now turns to the question of design thinking, or design-as-practice. 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 thinking – 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, design attitude and in particular the discussion about the role of design practices within innovation, 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.

The first idea is perhaps an obvious move, to conceive of "design-as-practice". If descriptions of design thinking and design attitude 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, routinised, 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 (Cross 2006), or organizational competence (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 (eg as deployed in Ingram et al 2007), the idea of designs-in-practice foregrounds the incomplete nature of the process and outcome 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 hold of a product, the work of design is still not over. Through their engagement with a product or service, the user 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, and users too.

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 objects that are the outcomes of design in the world, outcomes which 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 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. For many scholars, especially those working within European organization studies after the 1960s and 1970s (March 2007), the deterministic nature of Simon's arguments is unappealing and unpersuasive since it fails to acknowledge the contingencies of the social. However *The Sciences of the*

Artificial (Simon 1996) marks out an important intellectual agenda that acknowledges the activity of designing, which has so far not been taken up significantly within management studies. Another important work in theories of design is Donald Schön's (1987) *The Reflective Practitioner*, whose ideas of reflective practice pay heed to what professionals do, as an important counterweight to what he called the technorationalism shaping some professions.

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 prelude, before such a programme might begin.

Conclusion

The terms design thinking, designerly ways of knowing and design attitude are increasingly appearing in the pages of management and organization journals, not just those journals and papers concerned with the various fields of 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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[i] For example special issues of *Organization Studies*, 2008, Vol. 29, Issue 3; *The Journal of Applied Behavioural Science*, 2007, Vol. 43, Issue 1; and *The Journal of Business Strategy*, 2007, Vol. 28, Issue 4.