

# Rethinking Design Thinking: Part 1

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## Abstract

The term design thinking has gained considerable attention over the past decade in a wide range of organizations and contexts beyond the traditional preoccupations of designers. The main idea is that the ways professional designers problem solve is of value to firms trying to innovate and to societies trying to make change happen. This paper reviews the origins of the term *design thinking* in research on designers and its adoption by management educators and consultancies within a dynamic, global mediatized economy. Three main accounts are identified: design thinking as a cognitive style, as a general theory of design, and as a resource for organizations. The paper then argues there are several issues that undermine the claims made for design thinking. The first is how many of these accounts rely on a dualism between thinking and knowing, and acting in the world. Second, the idea of a generalized design thinking ignores the diversity of designers' practices and institutions which are historically situated. The third is how design thinking rests on theories of design that privilege the designer as the main agent in designing. Instead the paper proposes that attending to the situated, embodied routines of designers and others offers a useful way to rethink design thinking.

## Keywords

Design thinking, practices, designers, innovation, organization design

## Biog

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# Rethinking Design Thinking

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## Introduction

Professional design is now operating within an expanded and increasingly complex field. Some design professionals take solving complex social issues as their domain, often but not always working in close collaboration with specialists in public services from healthcare to those working with disadvantaged families to policing. Other designers and their ways of working are welcomed into business schools to teach the next generation of managers and leaders. Concepts and language that used to be associated with designers now enter other specialist areas: policymakers are told that public services should be more user-centered (Parker and Heapy 2006); businesses engage with customers by offering new meanings for things (Verganti 2009); the US Army is considering the role of design in warfare (School of Advanced Military Studies n.d.). Professional design, in particular design as practiced within the studio-based tradition of many art schools, is taking a new place on the world stage.

For design firms working for global clients in relentless pursuit of new markets, new offerings and new kinds of value creation, design itself is being remade (Tonkinwise 2010). Design as design *thinking* should provide more than mere design. And yet, this re-assembling of some of the approaches, knowledge and practices of professional designers, first within academic design research, and then within business schools and consultancies, has not brought a happy synthesis. Indeed, industry observers are beginning to question its most fundamental assumptions. Working within different contexts and at different speeds, from the slow pace of academia to the fast-moving world of consultancy, some of its key proponents are beginning to question design thinking, even calling it a “failed experiment” (Nussbaum 2011).

While much of this critical discussion is beginning to take shape outside design circles, this article will examine design thinking from within. Now, at a time when design and designers are working in challenging new contexts, we must engage in discussions about the place of professional design in the world, If we explore design thinking by using theories of practice, we may better understand designers' work within the social worlds in which it takes place. Rather than viewing design thinking as a disembodied and ahistorical cognitive style, we must clarify its function. Design thinking may have failed; instead we should understand design as a situated, contingent set of practices carried by professional designers and those who engage with designers' activities.

### **Asking What If: The Designer as Cultural Interpreter**

When design thinking emerged more than a decade ago, it offered a response to the ebbs and flows of a global, mediatized economy of signs and artifacts; in this context, professional designers play increasingly important roles, less as makers of forms and more as cultural intermediaries (Julier 2008) or as the "glue" in multi-disciplinary teams (Kelley and VanPatter 2005). They are interpreters of changes in culture who then create new kinds of cultural form. While some designers have always seen design as playing important roles socially and politically as well as economically – William Morris, the Arts and Crafts movement, and Italian groups such as Superstudio and Archizoom are examples (Julier 2011) – what is distinctive about the development of design thinking is its adoption within managerialist discourse, in particular business schools, over the past decade.

In just the last five years, the term is more and more ubiquitous. It found its way into conversations at Davos, the annual meeting of politicians and senior executives from global firms (IDEO 2006); at TED (TED 2009), a conference series that attracts leading figures in business, technology and entertainment; and into the pages of the *Harvard Business Review*, an influential (although not peer-reviewed) academic journal (Brown 2008). Design thinking and the designers who say they practice it are associated with having a human-centered approach to problem solving, in contrast to being technology- or organization-

centered. They are seen as having an iterative process that moves from generating insights about end users, to idea generation and testing, to implementation. Their visual artifacts and prototypes help multidisciplinary teams work together. They ask “what if?” questions to imagine future scenarios rather than accepting the way things are done now. With their creative ways of solving problems, the argument goes, designers can turn their hands to nearly anything. Design is now central to innovation and since organizations (1) are under pressure to maintain or grow market share, or if in the public sector, increase user satisfaction and effectiveness, then designers and their thinking have something important to offer. (2)

### **The Creative Class and the “New Spirit” of Capitalism**

To understand this move requires attending to wider developments over the last few decades shaping what goes on within and between societies, organizations of different kinds, and political institutions. To address these topics fully would require more space than is available but I want here to highlight particular themes.

The first is a view of capitalism which sees it as unstable, fluid and dynamic (Lash and Urry 1994; Thrift 2005). Boltanski and Chiapello (2005)’s description of a “new spirit” of capitalism captures some of the energy in the shift from hierarchies to networks and from bureaucratic discipline to team-work and multi-skilling, as capitalism absorbed its critiques and remade itself as offering managers both autonomy and security. A second theme shaping the product-saturated developed world is the importance of the economy of signs that ignore state borders and in which the value of a commodity cannot be separated from its symbolic value (Lash and Urry 1994). A sophisticated effort to engage diverse audiences or stakeholders in establishing the meaning of these signs marks out those commercial firms which at some level understand this (Verganti 2009). A third theme is the rise of what Florida (2002) calls the creative class, for whom work and professional identities are caught up in creating meaningful new forms. For Florida the word “creative” is not just reserved for designers,

musicians and visual artists but also computer programmers and opinion-makers such as columnists. These professionals find meaning in work which is characterized by flexibility, autonomy and creativity and which blurs their professional and personal lives, as they move across national borders without being anchored to industrial modes of production and consumption.

A fourth theme is the ongoing, but recently re-energized questioning about the role of business schools and their place in the world as centers of research and education (Harvard Business Review 2009). As the global financial and economic crisis of 2008 showed, neither MBAs nor their professors have all the answers. On the contrary, some of the practices associated with the world of high finance and its emblematic product, the derivative, carry with them important and yet unanswered questions about governance, accountability and values. Interest within business schools in how designers go about engaging with problems predates the crisis (eg Boland and Collopy 2004) but rests on the idea that established ways of thinking about managing and organizing are not adequate to dealing with a fluid business environment (Tsoukas and Chia 2002), let alone any number of global challenges from climate change, to resource inequality, to peak oil. What this has meant for managers and policy-makers is that the urgent quest for innovation and novelty has new resources – a creative class who have a privileged place within contemporary capitalism.

### **Understanding Design Thinking**

Even on a cursory inspection, just what design thinking is supposed to be is not well understood, either by the public or those who claim to practice it. As Rylander (2009) points out, it's hard enough understanding design and thinking, let alone *design thinking*. So it is not a surprise that those who support its application to business or more broadly to public services or social problems, have trouble articulating what it is, whether all designers can do it, whether it is something new or just a different name for what good designers have always done, and why it might be a good thing that non-designers can learn it and do it too, or perhaps they do it already. Decoupled from any one field or discipline of

design, design thinking is meant to encompass everything good about designerly practices. Given the reach and appeal of these claims, it is time to explore the origins of design thinking. Above all, we must examine what it is and understand how it is being mobilized within contemporary conversations about change and innovation.

In this study three things come into view. Firstly that accounts of design thinking often rest on a dualism that makes a distinction between “thinking” and “doing” and between designers and the worlds they do design in, rather than acknowledging the situated, embodied work of design thinking in practice. Secondly, acknowledging the diversity of designers’ practices and the institutions in which they work makes it questionable to generalize about a unified design thinking exhibited across all of them. Thirdly, descriptions of design thinking rest on sometimes contradictory views about the nature of design and, for all the claims about being “user-centered”, still emphasize the designer as the main agent within design.

[INSERT FIGURE 1 HERE]

*Figure 1 View of teaching studio at the Royal College of Art, London, during visit by the author and her MBA class (Photo: Lucy Kimbell)*

## **Design and Its Problems**

No doubt thinking has always been part of the work that designers do, but the term design thinking that became prominent over the past five years emphasizes the intangible work done by designers. Several recent studies (Bradke-Schaub et al 2010; Cross 2010; Dorst 2010; Tonkinwise 2010) highlight how recent popular accounts of design thinking ignore the extensive research on designers’ ways of working over previous decades since the first Design Thinking Research Symposium in 1991 (Cross et al 1992), let alone earlier events such as the Conference on Design Methods of 1962 (Jones and Thornley 1963). Although much of the recent public presentation of design thinking is tied to one design consultancy, IDEO (Brown 2008; Brown 2009; Brown and Wyatt 2010), the

history of design thinking is more complex. In this section I will outline some of the main contributions and then summarize these into three broad positions in Table 1. Although any such synthesis reduces diverse research into overly simplistic categories, it can advance understanding by making clearer different approaches and their implications.

A stream of research originating in the 1960s focuses on how designers do designing. What began as the design methods movement (Jones 1970; Buchanan and Margolin 1995) gradually shifted towards investigations in design thinking (Cross 1982); researchers sought to understand the processes and methods by which (successful) designers went about design activity. This exploration also led them to study the nature of design problems in more depth. But to understand how design thinking emerged, we must go back a little earlier to understand how design itself was understood at this time.

### **Design's Fragmented Core**

To this day, design remains a fragmented discipline. When in 1971 Christopher Alexander argued that design is about giving form, organization and order to physical things, he acknowledged an entire school of thought. For Alexander, "the ultimate object of design is form" (1971: 15). The idea that form is a physical arrangement remains a dominant view of what designers do: they make things. Visitors to professional design studios are likely to note a disorderly arrangement of objects on work surfaces, walls and floors. Such clutter reminds us how professional design still involves doing things with and to objects, even for those designers who see their work as designing intangible services or experiences (Figure 1).

Writing contemporaneously with Alexander, Herbert Simon was also trying to understand and describe design. Having already made contributions to economics and organization theory, Simon turned his attention to the organization – or in his terminology – "design" of human action in the realm of the artificial. In *The Sciences of the Artificial* (1969) Simon identifies design as the

knowledge that is in the domain of professions such as engineering, management or medicine. (3) He believed that these fields all concern “what ought to be” and contrast with the sciences which are concerned with “what is”. He saw design as a rational set of procedures that respond to a well-defined problem; solving this problem involves decomposing systems (Simon 1962) as well as searching for and choosing alternatives. He argued that his approach worked for ill-defined problems too (Simon 1973). Simon assumes that it is possible to determine a desired state of affairs and thus, he writes, “problem solving requires continual translation between the state and process descriptions of the same complex reality” (Simon 1969: 112). Although Simon was also concerned with form in the sense of the boundaries between internal and external worlds, artifacts did not feature strongly in his view.

The tension between these two conceptions of design remains evident today and informs the discussion about design thinking. On the one hand, following Alexander’s thesis, designers give form to things; they are privileged makers whose work is centrally concerned with materiality. This is the tradition of craft and professional design fields that create specific kinds of objects from furniture, to buildings, to clothing. Simon, on the other hand, suggests that designers’ work is abstract; their job is to create a desired state of affairs. This way of thinking about design is the core of all professions, not just the work of engineers and designers of artifacts.

Both Alexander and Simon were concerned with describing what design is, and how to do it, but neither emphasized design thinking. Similarly while Jones’ (1970) work on design methods emphasized the importance of changing how a problem was thought about in order to develop a new solution, it was only later that the term design thinking emerged. Peter Rowe’s *Design Thinking*, originally published in 1987, provides one of the earliest discussions of the concept. Based on Rowe’s teaching of architects and urban planners, the book offers both case studies and discusses the “procedural aspects of design thinking,” including descriptions of the design process, and then introducing generalized principles. Two main ideas emerge. Rowe argues that design professionals have an episodic



way of approaching their work; they rely on hunches and presuppositions, not just facts. But he also argues that the nature of the problem-solving process itself shapes the solution. For Rowe, discussions of how designers actually design are necessarily shaped by wider conversations about the nature of architecture itself. “We need to move directly into the realm of normative discourse about what constitutes architecture and urban design in order to clarify the inherent nature of the enterprise and the direction in which procedures are inclined” (Rowe 1998: 37). Although Rowe is rarely cited in more recent texts, these topics frequently reappear in subsequent literature.

Researchers working in several fields, including engineering, architecture and product design, continued to study how designers think and what they know as they solve problems. Key contributors include Nigel Cross, although he generally prefers to use the phrase “designerly ways of knowing.” (4) Cross sees designers’ mode of problem solving as solution-focused as they tackle ill-defined problems and situates this within a larger argument about design as a coherent discipline of study distinct from the sciences and the humanities (1982; 2006). Donald Schön introduced the idea of framing and making moves when problem-solving during professionals’ reflection-in-action (Schön 1983). Bryan Lawson, on the other hand, studied the practice of designing in a context of multiple constraints (Lawson 1997). Nigel Cross and Kees Dorst developed the idea that problems and solutions co-evolve (Cross and Dorst 1998), and Cross suggested that designers treat all problems as ill-defined, even if they are not (Cross 2006). Attempting to explain designers’ tendencies to generate new solutions, many researchers have emphasized abductive reasoning (Cross 1982; Dorst 2010). Dorst (2006) noted that since a designers’ understanding of a problem shifts during a design process, other concepts might be better employed, suggesting instead that designers construct designs that transcend or connect paradoxes. Burnette (2009) describes different kinds of thinking within a design process. One focus has been to discern different levels of expertise among designers, from novices to visionaries (Lawson and Dorst 2009), although without much reference to sociological work on professions and institutions. In short, while there has been a sustained effort to understand and describe what professional

designers do in their design work, this has not yet generated a definitive or historically-informed account of design thinking, nor any explanation for why they might have a particular cognitive style.

While this body of research focused on designers and what they think and do, others continued to take forward work defining the field of design. Buchanan's (1992) paper "Wicked Problems in Design Thinking" shifted design theory away from its legacy in craft and industrial production towards a more generalized "design thinking." This concept, Buchanan argues, could be applied to nearly anything, whether a tangible object or intangible system. Drawing on Pragmatist philosopher John Dewey, Buchanan sees design as a liberal art, uniquely well-placed to serve the needs of a technological culture in which many kinds of things are designed, and human problems are complex. For Buchanan, design problems are indeterminate or wicked problems (Rittel and Webber 1973). The designer brings a unique way of looking at problems and finding solutions. He describes four orders of design which approximate the artifacts that design practitioners tend to work on: signs, things, actions, and thoughts. This version of design thinking is less concerned with individual designers and how they design, but rather seeks to define design's role in the world. Similarly, Rylander (2009) also compares design thinking to a Pragmatist inquiry and concludes that Dewey's work on aesthetic experience provides a useful way to explore designers' special skills and examine the claims made for them in more detail.

### **Design Thinking: De-politicizing Managerial Practice**

The books and papers that have done most to popularize the idea of design thinking mostly ignore this literature. While the term design thinking originated with academics who conducted research within design disciplines, today the phrase most often situates design thinking in terms of the challenges facing organizations, especially businesses (Figure 2). Concern with design's place in the world and thus with larger social or political questions is lost when design is mobilized within a managerialist framework. As Sam Ladner (2009) puts it:

“Design is attractive to management because it is a de-politicized version of the well known socio-cultural critique of managerial practices.”

[INSERT FIGURE 2 HERE]

*Figure 2 MBA students using design approaches during an entrepreneurship workshop led by the author in a lecture theatre at Saïd Business School (Photo: Lucy Kimbell)*

Two main proponents have recently reconfigured design thinking. Tim Brown leads one of the world’s most influential design consultancies, IDEO, and is the author of *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation* (2009). The other, Roger Martin, is dean of the Rotman School of Management in Toronto, with a background in management consulting, whose book is titled *The Design of Business: Why Design Thinking is the Next Competitive Advantage* (2009). Although each describes design thinking somewhat differently, both explore its role within organizations. Their work can be seen as part of growing interest in design in management academia including multiple journal special issues (eg Bate 2007; Jelinek et al. 2008), tracks at major conferences (eg EURAM 2009; EGOS 2010; Academy of Management 2010), scholarly workshops (eg Case Western Reserve 2010) and experiments in teaching design to MBAs and executives including at the Fox School of Business (Temple University 2011); the Rotman School of Management (University of Toronto 2011); Saïd Business School (Kimbell 2011); and the Weatherhead School of Management (Case Western Reserve University 2011).

Presented as a way to balance organizational tensions between exploration and exploitation (Martin 2009) or as a loosely-structured organizational process that stimulates innovation (Brown 2009), these accounts of design thinking do not draw extensively on research in either design studies or management and organization studies. Despite the lack of a wider research base, books by Tim Brown and Roger Martin widely disseminate an idea of design thinking that is gaining legitimacy among designers, organizations and government bodies. In the UK, for example, the government-funded national Design Council argues that

design thinking plays a key role in innovation (Design Council 2009). In Denmark, a cross-ministerial innovation unit called MindLab uses a form of design thinking to combine design-centered and social science approaches to create new solutions for society (Mindlab 2009).

Brown's accounts of design thinking present the concept as an answer to challenges facing organizations wanting to innovate but also societies grappling with complex public issues. Brown has published widely. In addition to *Change by Design* (2009), his writings include an essay in the *Harvard Business Review* (2008), and the *Stanford Social Innovation Review* (Brown and Wyatt 2010), as well as his blog on the topic (Brown 2011). To some extent these echo earlier publications by designers from IDEO such as David Kelley (2001). While Brown never claims that his contributions are academic, he nonetheless rehearses many of the findings from research, for example seeing design thinking as a fundamentally exploratory process (Brown 2009: 17). Design thinkers know there is no right answer to a problem. Rather, he argues, through following the non-linear, iterative design process that he calls inspiration, ideation and implementation, design process can convert problems into opportunities.

Brown places particular emphasis on design thinking as a human-centered activity (Brown, 2009: 115). Underpinning this approach is the idea of empathy: designers are perceived as being willing and able to understand and interpret the perspectives of end users and the problems they face. In doing so, Brown suggests, they more or less feel their way through to a new solution. According to Brown, a successful design outcome exists at the intersection of three concerns: what is desirable from the users' perspective, what is technically feasible, and what is commercially viable for the organization (Brown 2009). In so doing, this approach introduces a key, if often ignored, paradox. On the one hand, designers are positioned as key interpreters of what end users "need." They are expected to do this by using ethnographically-inspired techniques that help them understand the user's perspectives and situated actions. On the other hand, in practice this process shows little of the reflexivity of the social science traditions. In contrast to much contemporary design practice and education, social

scientists are trained to question what theoretical, political or other commitments they bring to their work and how these shape their research findings. Construed in this way, design thinking fails to reference wider theories of the social and misses opportunities to illuminate the context into which the designer is intervening.

In *The Design of Business* (2009), Roger Martin presents a different way of thinking about design thinking.<sup>(5)</sup> Martin argues that design thinking gives business a competitive advantage. In contrast to Brown, who does describe what professional designers do and make and what they are attentive to, Martin focuses on methods used by successful managers he interviewed and examines how firms as a whole function. His version of design thinking deals less with individual cognitive styles and doesn't present sets of material practices; rather, he focuses on systems of organization. In this way he echoes arguments put forward by others teaching and researching in a business school context (eg Boland and Collopy 2004). Design thinking as practiced by good designers, Martin says, has something important to offer managers, enabling them to shift from choosing between alternatives to helping them generate entirely new concepts. Martin sees design thinking as combining abductive, as well as inductive and deductive, reasoning. This is particularly of value to businesses tackling the well-established challenge of focusing on either exploitation or exploration (cf March 2001). Those that have mastered questions of scale and routinization by developing capabilities to produce and distribute lots of the same things, at the right quality and cost, are not so able to innovate. Finding a better balance between exploration and exploitation, and between abductive as well as inductive and deductive reasoning, is what Martin calls design thinking.

Other researchers have begun to study design thinking and are extending this argument further. Robert Bauer and Ward Eagan (2008) also site their discussion of design within a larger critique of what goes on within many organizations. For Bauer and Eagan analytical thinking is part of, and not the opposite of, design thinking. Reviewing and synthesizing much of the research on design thinking, they insist that the subject cannot be reduced to aesthetic

judgments or cognitive reasoning; instead, they perceive several epistemic modes that come into play at different points in a design process. Although analytical thinking provides the epistemic underpinning of capital, they believe that design thinking represents the epistemology of creative work. Like Martin and Brown, Bauer and Eagan then offer design thinking as an organizational resource to make up for some of the shortcomings of management and balance conventional over reliance on analysis.

More recent discussions of design thinking have followed this trend, locating designers' knowledge and thinking within the contexts in which they work. For example Robin Adams et al (2010) study what it means to be a design professional and how designers become professionals. Their analysis avoided dualisms that separate cognition and action; instead they propose a framework in which knowledge and skills are embedded in an embodied understanding of practice. Their findings deflate simplified versions of design thinking and instead highlight differences in knowing, acting and being among designers.

### **Comparing approaches to design thinking**

To summarize, design thinking has been used to characterize what individual designers know, how they approach and make sense of their own work, as well as how they actually do it. In addition to describing the practices of designers, the term also offers a theory of design that extends Herbert Simon's ideas. In this context, design does not give form to things; instead, it concerns action and the artificial. More recently, the term has been mobilized with some success by design consultancies, management educators, and other scholars. In this context it suggests an approach to business or even social innovation.

	<b>Design thinking as a cognitive style</b>	<b>Design thinking as a general theory of design</b>	<b>Design thinking as an organizational resource</b>
Key texts	Cross 1982; Schön	Buchanan 1992	Dunne and Martin 2006;

	1983; Rowe 1987; Lawson 1997; Cross 2006; Dorst 2006		Brown 2009; Martin 2009; Bauer and Eagan 2008
Focus	Individual designers, especially experts	Design as a field or discipline	Businesses and other organizations in need of innovation
Design's purpose	Problem solving	Taming wicked problems	Innovation
Key concepts	Design ability as a form of intelligence; reflection-in-action, abductive thinking	Design has no special subject matter of its own	Visualization, prototyping, empathy, integrative thinking, abductive thinking
Nature of design problems	Design problems are ill-structured, problem and solution co-evolve	Design problems are wicked problems	Organizational problems are design problems
Sites of design expertise and activity	Traditional design disciplines	Four orders of design	Any context from healthcare to access to clean water (Brown and Wyatt 2010)

Table 1 Different ways of describing design thinking

Given the diversity of these approaches, there is still no clear description of design thinking. On what principles is it based? How different is it to other kinds of professional knowledge? Do all designers exhibit it? What are its effects within the worlds where design takes place? How can it be taught? Further, these descriptions present several issues which need to be addressed by researchers studying professional designers, as well as the managers and educators who apply these practices social innovation or management education. In the next section I identify three such issues and then suggest how design thinking might be reconsidered.

### **Acknowledging the Cultures of Design**

Many studies in design thinking replicate a dualism within research fields; they reflect important differences in the underlying ways the world is understood and what can be known about it. Researchers who focus on the individual designer

and his or her cognitive style rarely study the world within which the designer works (cf Bourdieu 1977). Such researchers usually cultivate objective rather than subjective knowledge; moreover, their research assumes there are clear boundaries between the designer and the world s/he is in; further, the researcher is construed as remaining outside this world. These studies describe what designers do and trace how their thinking develops in the course of a project, but they often ignore key aspects of the designer's world. For example, several studies of design thinking as a cognitive style rely on protocol analysis based on recording and then analyzing what designers say about what they are doing. This is usually monitored during an artificial exercise in which the designers are given a problem to solve. While these studies may produce interesting findings, this approach sometimes presents a version of design thinking as a simple form of information processing with inputs and outputs (eg Badke-Schaub et al 2010). Alternately, design thinking can be presented as a process that is supposedly applied to an organization (eg Brown 2009), though this approach never clarifies how easy it is to import it from one context to another.

In contrast, some ethnographic accounts of design thinking do not make distinctions between designer and world, or between researcher and object of study and produce "thick description" (Geertz 1973) of what goes on during designing. These accounts attend to the situated, embodied ways that designers go about their work and the artifacts they engage with and make (eg Bucciarelli 1994; Henderson 1999). Given extensive research in design fields (eg Winograd and Flores 1986; Suchman 1987; Ehn 1988; Ehn 2008), not to mention sociology, anthropology and organization studies, embodiment and being in the world are perceived as a condition of knowing and action. It seems reasonable to explore how this approach might describe and explain designers' approaches to their work and the nature of design thinking. Drawing on Dewey, Buchanan (1992) and Rylander (2009) do not rely on this separation between knowing and world; instead, they offer an understanding of the act of designing by studying designers in the world. However, they do not share the close attentiveness paid to the role of artifacts found in material culture approaches influenced by



anthropology, nor do they situate their accounts of design within larger historical frameworks. A future direction for research into designers' thinking and knowing, therefore, could take as a starting point practitioners' being in the world and their relation to other social actors including artifacts and other social practices and institutions. To understand what happens in designing, it remains important to explore how political, socio-cultural and economic developments have shaped design practice over time.

Without extensive comparative data, we may wonder how useful it is to generalize across design fields as different as, say, architecture and computer science. Much of the work on design thinking has tried to generalize what designers do, think and know, implying that this is different to what non-designers do (Cross 1982; Buchanan 1992). The recent interest in design within management may destabilize the idea of designerly ways of knowing. Some studies, for example, suggest that medics exhibit qualities associated with design thinking. Such assertions implicitly undermine design's claim to uniqueness (Cross 2010). Although research accounts typically specify what type of design professional has been studied and identify their level of expertise, popular efforts to understand design thinking rarely make clear which design field is being discussed. Much academic research on design thinking ignores the particular context of knowledge-intensive consultancy and its place within a fluid and dynamic economy; this environment demands that designers manage and account for their work in particular ways (eg Julier and Moor 2009). But a recent shift in studies of design acknowledges the field's cultural and sociological basis. The move from a visual to a cultural perspective in design history (eg Julier 2008) as well as the field's growing focus on practices and consumption (eg Shove et al 2007; Crewe et al 2009) both recognize this change.

This approach might usefully be introduced in studies of design thinking too. Instead of focusing on individual designers and their cognitive styles, or on a methodology that can be applied in organizations, work on design thinking could attend to the cultures of design. In several professions and disciplines practitioners refer to themselves as designers and they conceive of their work as

design. Rooted in distinct educational traditions that legitimize students and practitioners in different ways, these approaches are shaped by national and regional influences over time. In the UK, for example, architecture and engineering have strong professional bodies and authorizing procedures. These can be contrasted with design professions based in art schools. Here, product, communication, and fashion design, for instance, are typically taught without the need for extensive professional accreditation and with limited domain-specific bodies of knowledge (Wang and Ilhan 2009). Engineering is often linked with formal theories of design, but fails to account for the generation of creative ideas (Hatchuel and Weil 2009). Nevertheless, engineering designers have an identifiable visual and material culture (Bucciarelli 1994; Henderson 1999). Emerging fields such as service design (eg Meroni and Sangiorgi, forthcoming) often sit uncomfortably between academic and professional boundaries, concerned as they are, not just with the design of objects but also systems, processes and social arrangements. In this context, several different types of professionals do design work, not just “designers” (Figure 3). Acknowledging the cultures of designers and understanding the different kinds of practices that have developed within various institutional arrangements would help publics and scholars alike better understand and employ design thinking. Such clarifications would also allow researchers to identify if indeed a particular kind of knowledge practice can be shared across all design fields.

[INSERT FIGURE 3 HERE]

*Figure 3 Bringing an attentiveness to material artifacts and the experience of services in practice during a workshop for managers of public services led by the author (Photo: Lucy Kimbell)*

As Rowe points out (1987), describing how designers do design, how they think and what they know forces us to examine our assumptions about what constitutes design; it forces us to define design itself. Not surprisingly, many accounts of design thinking identify the designer as the main agent in design; these approaches also explore individual cognitive styles, although some versions also reflect the influence of stakeholders other than the user or

customer (eg Bauer and Eagan 2008). Even when design thinking involves designers having empathy with users, the designer (or manager practicing design thinking) is presented as an agent of change within an organization or project. This perception starkly contrasts with extensive work in fields such as anthropology, sociology and consumption studies. In the latter context, users, stakeholders and consumers of designed things all act in ways that can challenge or disrupt the intentions of designers. For example, Lucy Suchman (1987) showed how people using photocopiers ignored the plans of designers, by not following instructions displayed on the top of the machine fully and therefore being unable to use the copier, which did not know they had made a mistake. Combining consumption theory with studies of science and technology, Elizabeth Shove et al. (2007) argue that innovation in products often requires innovation in practices. Suchman, Shove and other researchers have rethought design, presenting it as a distributed social accomplishment within which artifacts and other humans play important roles; they help constitute the meaning and effects of a design. In contrast, accounts of design thinking continue to privilege the designer, however empathetic, as the main agent in design. But such ideas may limit research, education or practice. Like anyone else, designers can be attentive to some things, and not others. We must acknowledge that design practice is shaped by designers' own theoretical and political commitments (Fry 2009); we must make such knowledge part of practice and research analysis.

### **Is Design Special?**

This essay assumes that designs, knowledge and research are constituted in practice. As studies of design practice are gathering pace (eg Suchman 1987; Ehn 1988; Julier 2007; Shove et al. 2007; Ehn 2008; Fry 2009; Tonkinwise 2010), the field is increasingly positioned as part of a wider turn within contemporary theory (eg Schatzki 2001). But design thinking has captured the imagination of practitioners and educators in a range of fields; this widespread interest leads to a discussion of design based more on anecdotes and claims than theoretically or empirically robust arguments. These accounts of design thinking rely on descriptions of designers' doings and sayings, the things they make, what they

know and how they act in the world. By focusing on situated, embodied material practices, rather than a generalized “design thinking”, we may shift the conversation away from questions of individual cognition or organizational innovation. Instead, design becomes a set of routines that emerge in context. Such explorations help clarify designers’ material practices. They also force us to decide if design is a special way of engaging with and acting on the world, unique to designers, or shared by others such as managers too.(6)

Although this body of research is based on a range of theoretical orientations, it raises important issues. Firstly, accounts of design thinking often make a distinction between thinking and action and between the designer and the context in which they are designing; secondly, they propose that there is something shared by all designers while not acknowledging important differences in how design professions and their institutions have emerged; and thirdly, they emphasize designers as the main agents in design. Instead, an alternative approach is proposed. This alternative draws on extensive work in anthropology, sociology, history, and science and technology studies. Moreover, these attend to the routine practices of those involved in design; they include not just designers, but also known and unknown users and other stakeholders. Design thinking is hardly the “failure” described by commentators like Bruce Nussbaum (2011): the practices of designers play important roles in constituting the contemporary world, whether or not “design thinking” is the right term for this. Design thinking does, however, remain undertheorized and understudied; indeed, the critical rethinking of design thinking has only just begun.

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### Notes

1. The term organization is used here to refer to formally and informally constituted entities that come together to work on a shared purpose, rather than being confined to businesses.
2. It is beyond the scope of the paper to explore claims that designers have an entirely distinct way of working in comparison to other professionals, let alone to assess whether applying a design approach leads to increased effectiveness and efficiency and “more” innovation, and hence to organizational value. Asking such a question is of course already framed by assumptions about how value is thought about and assessed.
3. Simon’s views developed over the three editions of *The Sciences of the Artificial* and his work remains open to a diversity of interpretation. A recent paper in the field of management, for example, identified three main approaches to design in Simon’s work (Pandza and Thorpe 2010) whereas for Hatchuel (2001), Simon’s version of design is best thought of as problem-solving.
4. A book with the title *Design Thinking* by Nigel Cross was published by Berg in 2011.
5. Although there are closer links to Brown’s version of design thinking as discussed in Dunne and Martin (2006)’s study of business education.
6. I should draw attention to my own stake in this conversation: I teach in a business school. While it is somewhat overshadowed by the rather older university of which it is a department, as a young school founded in 1996 it has tried to chart a path that offers a vision of management education that draws on several disciplines and on critical discussion, including among its specialisms science and technology studies. Having come from an art and design practice background, I have taught a version of design and design management to MBA students since 2005. My MBA elective is taken by up to 50 students a year, giving them a brief exposure to the material practices of design, opportunities to collaborate with designers, and an orientation to the artifacts and arrangements within organizations as sites for design inquiries, idea generation and

intervention. In developing my curriculum, I try to help students make sense for themselves of the claims made for design thinking, while at the same time encouraging them to explore the possibilities and limits of design's material practices and the cultures to the projects, organizations and ventures in which they work. See the blog archive at Kimbell (2011).

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