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Design Research - A Failure of Imagination?

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For a profession that claims imagination and divergent thinking to be among its key attributes, design research has failed to ignite public imagination. Despite efforts by the likes of John Maeda (2009), the rhetoric of STEM – science, technology, engineering, and mathematics – dominates the media. Science writers expound in newspaper columns, entire TV channels are devoted to the wonders of science. Science is, of course, important, but this one-sided view of research has not been counter-balanced by an equivalent, passionate exploration of the boundaries of design in the public sphere. Yet the potential is there – arguably, a handful of TED Talks have done more to raise the awareness of the importance of design than several decades of design research publication. Although there are exceptions, design research has failed to imagine and communicate an integrated vision of design comparable to that of science.

This paper argues that design has failed to integrate the nexus of theory, research and practice and is a call to arms for design researchers to bring their activities into a broader, public discourse. Despite the rhetoric of interdisciplinarity, design education research has become too convergent in its thinking and discipline specific. As practices such as service design engage in projects at the public policy level, it is essential for design to explicitly articulate the process of design synthesis (Kolko, 2011) in order to gain and maintain credibility, for such projects offers an opportunity to bring design's value and activities on par with the sciences in public discourse.

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A failure of imagination

I have an admission to make. Ninety-percent of the design and design education research that I read sends me to sleep. I am interested in design,

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education and research and the futures of all three, but while I am sure there are some inspiring research papers and presentations that I have not seen, the strike rate should surely be higher than this. For a discipline that claims creative thinking to be among its key attributes, design research has suffered a failure of imagination.

This is particularly noticeable in the lack of public discourse about design's value to society. The media regularly contains calls from scientists for more funding, more science to be taught in schools and claims for the enormous importance of science to the world. STEM subjects – science, technology, engineering, and mathematics – are the centrepiece of curriculum development and the associated funding (Higher Education Directorate, 2004). Newspaper columns and sections are devoted to science or, as in the case of Ben Goldacre's column in the *Guardian* (Goldacre, 2011), exposing *Bad Science*. Television channels and series, such as the BBC's highly successful *Wonders...* series featuring Professor Brian Cox (Cox, 2010), inspire and ignite the imaginations of schoolchildren and adults alike.

The purpose of this paper is not to bash science, however. Science *is* important as are technology, engineering, and mathematics, but this is just one side of the coin (and brain). Given that the world is not only filled with designed objects and media, but also suffering under the enormous weight and consumption of much of them, design clearly has a central role to play in society. Where are the impassioned calls for the role of design and for teaching design in public debates on curricula?

Some are there. Sir Ken Robinson (Robinson, 2005; Robinson, 2007; Robinson and Aronica, 2009) has argued the case for creativity in the curriculum from the perspectives of both personal fulfillment and economic value. Tim Brown (2009) contends that anyone, in any business, can and should become a design thinker. These two are perhaps best known through their TED Talk appearances, but their voices are missing from national newspaper columns, television series and government debates.

Don Norman (2010) has argued the case for a change in design education and was less polite than I when he wrote that he is "forced to read a lot of crap" (para. 1) when reviewing for conferences, journals and competitions. Provocative and insightful as Norman's article is, it was published on the design website, *Core77*, not in the national or international press, nor in conference proceedings or a journal. We are talking to ourselves and while it is important to talk amongst ourselves, it does not change the public agenda.

Professor Brian Cox's series had regular viewing figures of between three and four million when broadcast in the UK (Broadcasters' Audience Research Board, 2011), for example. Dan Brown's *The Da Vinci Code* (2003) is the UK's biggest selling book of the last decade with just over 4.5 million UK copies sold (Nielsen BookScan, 2011) and, while I have no sales figures for

the books of Tim Brown, Ken Robinson or Don Norman, it is reasonable to expect them to be significantly lower.

Apple sold 18.65 million iPhones alone in the first quarter of 2011 (Apple Inc., 2011), yet one might question the number of people who have heard of Jonathan Ive compared to Professor Cox, despite the far greater numbers of people owning the devices designed by Ive than the those that viewed Cox's TV series. Thanks to the efforts of broadcasters such as the BBC pushing the science agenda and through early contact with science in school, I would expect that many children and adults would have a better chance of describing the methods behind science than those behind design.

We only have ourselves to blame and it is a poor indictment of our imagination and communication abilities. Design education, design research and, by extension, design education research, have failed to imagine an integrated vision of design's role in society comparable to that of science. We have failed to make the case for and tell the stories of design and its processes in public discourse.

Design research and design education research should form the backbone of this message, but it needs to be communicated beyond the realms of conferences and journals. The skills of synthesis, of making connections between disparate fields and data points, of making intuitive leaps based on past experiences and insight are crucial to dealing with a world that is in constant flux and whose rate of continuous change is only going to increase (Johnson, 2010). Being able to take in and see the patterns in complex systems are essential to the future careers of designers as practices such as design thinking, social and service design start to engage in complex, global and political issues.

We should be making that case that these skills so central to design are also crucial skills for everyone. They should be central to discussions on curriculum where STEM is balanced by, as John Maeda put it, IDEA – Intuition, Design, Emotion, Art (Maeda, 2010, 2009). At the same time, we need to be as humble as we are bold and be aware of the history and practices of the areas design is making inroads into.

The mistaken divisions between theory, research and practice

Unpacking the comparison between science and design reveals a key to the problem. Design practice, design research and design theory have fractured apart from one another. When design research methods or theory are taught, they are frequently both taught and perceived by students as “not practice”. Worse, theory and methods are often seen as a distraction from getting on with the “real work” of creative design *practice* in both senses of the word as commercial practice and the activity of designing.

I can't blame the students for taking this view. Some design theory and research reads as if it comes from another planet, totally divorced from the activity of designing (and by this I mean the thinking as much as the doing).

I believe there are two key reasons for the split between design research, theory and practice. The first has to do with the role that the arts have in schools. The division between the STEM subjects and the arts happens very early on. This tends to create an environment in which pupils with more visual or kinaesthetic learning styles begin to reject STEM subjects or, at least, find them difficult to engage with due to the way they are usually taught. Even if they do want to engage in both the sciences and arts, preference choices often force them to choose one path over the other. This initial experience taints later ones when design students are studying in higher education. Subjects to do with theory or research immediately smell of science and either fear or boredom set in (c.f. Robinson, 2009).

The second reason is that designers have for too long been complicit in perpetuating the myth of design ability stemming from talent and inspiration. Both of those may play a part in successful design activities, but they do in any discipline. To accept that creative thinking is just the result of a special gift is to deny the effort that goes into practice and experience. This is perhaps not surprising. Relegated to being "non-academic" in school early on, designers can fall back on the "magic" of how they come up with great ideas to restore their sense of self-worth. Later, in agency form, this mystery is sold to clients, perpetuating the mythology.

This has been an enormous mistake on the part of commercial design practice and has led to a backwash into education and, I suggest, design education research. We have sold what we do as magic at the cost of hiding our processes and when we hide our processes we can no longer articulate them, teach them or give them the value it deserves.

Design synthesis and the scientific method compared

The choice of the word "magic" is a deliberate reference to the title of Jon Kolko's recent book *Exposing the Magic of Design: A Practitioner's Guide to the Methods and Theory of Synthesis* (2011) in which he argues the case for designers to interrogate and explicitly articulate the process of design synthesis. In one of the ten percent of design research papers that did not send me to sleep, some of the origins of Kolko's book can be found in his 2010 Design Research Society paper, *Sensemaking and Framing: A Theoretical Reflection on Perspective in Design Synthesis* (Kolko, 2010b).

Drawing upon the work of cognitive psychologists (Klein, Moon, & Hoffman, 2006) as well as communication (Dervin, 2003) and design theory (Schon, 1984; Coyne, 1988; Shedroff, 2000) among others, Kolko defines design synthesis as occurring during the "precarious moment between research and definition" (Kolko, 2010b). This "precarious moment" is the

intellectual leap that designers make as they move from research to insights to design and it is often poorly documented, if at all. This key part of the process is subsumed by the artefacts that usually follow – objects, images, diagrams – that are typically understood to be “design” by non-designers.

This stage is quite often left out of project planning or is often done on the designer’s own time. It is, after all, hard to make the case for paying someone to stare at a wall of Post-It notes, but this is often where the actual design activity happens. In Kolko’s definition of synthesis as distinct from sensemaking, the key attribute is externalising the process:

Sensemaking and framing can be enhanced and supported through externalization and through representations. Common to all methods of synthesis [...] is a “sense of getting it out” to identify and forge connections. This is an attempt to make obvious the sensemaking conditions described earlier. Emphasis is placed on finding relationships and patterns between elements and forcing an external view of things. In all of the methods, it is less important to be “accurate” and more important to give some tangible form to the ideas, thoughts, and reflections. Once externalized, the ideas become “real.” They become something that can be discussed, defined, embraced, or rejected by any number of people, and the ideas become part of a larger process of synthesis. Essentially, sensemaking is an internal, personal process, whereas synthesis can be a collaborative, external process. (Kolko, 2011, pp 15-16).

Kolko (2010a) uses Peirce’s (1998) model of abductive thinking to describe hypothesis as a form of inference. “It is the hypothesis that makes the most sense given observed phenomenon or data and based on prior experience” (Kolko, 2011, p. 23). This is the kind of best guess or inference that designers make all the time, ideally based on combination of experience and research.

This is in stark opposition to the science’s usual model of inductive reasoning, by which a structured experience (an experiment) has an intrinsic logic. “Each time I do A under the same conditions, B occurs. Inductively, the next time I do A under these conditions, B will occur” (Kolko, 2011, p. 24). The other keystone of scientific research, peer review, is what allows the testing and verification of those conditions by others. It is in this comparison of the two methods that we see the difference of attitude between design and science.

For science, the process and method are everything. Nothing is believed to be true until it is experimentally proven to be so and even then the door is always open for the discovery that experimental conditions, instruments or starting data were flawed. Arguably, method and process are more important than the actual end results – scientists remain skeptical until proven otherwise and rigour is paramount. Traditionally, however, design practice has taken the opposite approach. Results are what count and often speak for themselves in the designed artefacts, process is simply a means to an end.

Kolko argues that deductive and inductive reasoning are closed logical systems that “cannot offer any ‘new findings’ contained within the logic of the argument” (Kolko, 2011, p. 24). Design tends towards the intuitive leap or process of synthesis, which is essential for innovation. Designers in commercial practice (and many a design student) shy away from unpacking and making the case for their process of synthesis. It can feel like one is post-rationalising decisions, but this is largely due to a lack of vocabulary and practice in making this process explicit.

While designers have historically referenced a period of design synthesis in their process, little has been done within the community of design research and design practice to formalize methods of synthesis or to describe a cohesive theory of synthesis. Instead, designers commonly performed design synthesis in the due course of solving a design problem, and it was rarely explicitly separated from forms of ideation and the “raw creativity” commonly associated with form giving. Additionally, synthesis was rarely conducted overtly—instead, designers would synthesize research through casual conversation in the design studio or—more commonly— through personal reflection, and much of the synthesis process was conducted “in one’s head.” (Kolko, 2010b)

Kolko is not entirely correct in arguing that little has been done within the community of design research in this area. Kolko himself builds upon the work of several authors already cited and several issues of *Design Issues* tackle the subject, for example. He is, however, right in his argument that this has not been terribly well formalized, especially outside the domain of journals and conferences.

While one might argue this is a failing of design educators to read and communicate this material, it is also a failing of commercial designers for not placing the requisite value on this part of the process and a failure of the design research community to properly publicise the value of synthesis.

There is, and will always be, a tension at the nexus of industry, students, faculty and research in terms of what is deemed a necessary understanding of the thinking processes behind design practice, but being more explicit about these processes is crucial in emerging design disciplines that deal with complex social problems and less with the individual artefacts of design. As Norman (2010) notes:

Service design, interaction design, and experience design are not about the design of physical objects: they require minimal skills in drawing, knowledge of materials, or manufacturing. In their place, they require knowledge of the social sciences, of story construction, of back-stage operations, and of interaction (para. 24).

In failing to communicate design synthesis to a wider audience design research is easily challenged and dismissed by more rationalist science and business minds, leaving us wanting when it comes to winning research funding or, indeed, a prime place in the curriculum or at the boardroom table. Without this, designers remain regarded simply as stylists, design researchers are left to make sense of the chaos, and design education researchers have no agreed agenda.

One of the key differences between the sciences and design is in the relationship between research and practice. For most scientists, research is what they do. Research *is* science, scientific practice *is* research. A similar view of design is absent from most commercial design practice and design education. In many countries with a long tradition of design (such as Switzerland, where I am based), design research is a very young field. As design research has become more important both intellectually and financially to institutions, a false separation between theory, research and practice has been created. This has meant that design is seen what designers do, while theory and research are concerned with thinking *about* design in an academic context only.

For institutions and teachers that come from a history of design as craft (in which theory and research are present but often unarticulated), this separation gives rise to practical tensions concerning funding, positions and program design. In academia, at least, this often means lecturers and researchers are either part-time and have a day job as a “real” designer or they are not active in design practice any more at all. Students are acutely aware of this, but design education from undergraduate to postgraduate tends to take a trajectory from practice into the purely theoretical. The two are not integrated

It is essential that we teach students that theory *is* practice and practice *is* theory and that the same is true for research. To do this we need to be clearer about the value of research and synthesis to the practice of design. We also need argue for greater rigour in commercial design practice as designers start

to work in far more complex areas, such as those highlighted by Norman (2010), than their training has prepared them for.

Service Design and World Peace

We have seen the beginnings of this in the increased use of research methods borrowed from areas such as psychology and sociology in design projects. This has helped designers and researchers articulate their methods and process in the more rigorous terms that those disciplines use. There are still concerns with ethical standards and cross-cultural understanding in the use of ethnographic research by designers (Miller, 2010), but as interest from both sides gains momentum, a fertile cross-pollination may result (Miller et al., 2010).

Service design is a practice that actively sets out to uncover and design or redesign the relationships between multiple touchpoints and participants in services. It is defined by service design pioneers, live|work as, “design for experiences that reach people through many different touch-points, and that happen over time” (live|work 2008). The discipline has emerged from a recognition that the complexity of services in a post-industrial economy requires a level of design engagement far further up the chain of events of project initiation and conception and that a different set of methods and tools are required to deal with the complexities that arise.

While at one level service design is about the design of experiences of and across touchpoints, it is largely about designing *with* people instead of *for* people (Løvlie, Polaine, & Reason, Forthcoming). This involves ethnographic field research, insight gathering and synthesis, as well as engaging in organisational change through co-design and connecting this to the customer, user or participant experience.

Many of the services that are valued in society are those that we expect to be around for a long time, such as healthcare, welfare, finances, mobility, communications and energy. For service designers engaging in these fields the design challenges become increasingly complex. A project aimed at helping the long-term unemployed get back to work (Sunderland City Council & live|work, 2008), for example, involved bringing together a number of different community organisations and specialist service providers ranging from mental health to drug rehabilitation and carers. In total, over 280 people contributed to the design of the pilot project.

More recently, service designers and researchers have been exploring the limits of design’s ability to tackle one of the most complex, important and “wicked” problems of all – international peace, development and security (Miller et al., 2010). Derek B. Miller and Lisa Rudnick from the Security Needs Assessment Protocol (SNAP) team at the United Nations Institute for Disarmament Research (UNIDIR) have been exploring design’s relationship with public policy in order to build an interdisciplinary research agenda.

Miller, however, strikes a note of caution regarding the danger of unintended long-term side effects of the design intervention.

Many designers today, especially the younger generation of designers, want to do some good in the world. They no longer seem satisfied simply creating objects of desire for profit. This is laudable. But for the good intentions of the design profession to actually result in some good, it is going to be necessary to carefully attend to how we design. Design is both a social process, with implications for others who are participants to that process, and also brings something new into the world that may have social force. Attending to both matters responsibly will be essential as the field moves forward.

This is especially true as design steps into the wider world of international peace and security — given that the issue here is not consumer value but life and death.

There is some limited discussion about ethics in design, but in comparison to codes of conduct in, say, anthropology, architecture, and medicine, one would be forgiven for finding them undeveloped. (Miller, 2010)

Miller makes two key distinctions between design and policy making. The first is that policy making is usually carried out by democratically elected representatives. That is, the policy “design process” is done by people who have been elected and can be de-elected if the design outcome is not the one the citizens want.

Design, on the other hand, is more often about making decisions for people or, at best, on behalf of them, but not as their elected representatives, regardless of what we believe about how much we try to walk in their shoes. This important debate is outside the scope of this paper, but it is worth noting that the kind of participatory and co-design processes used in service design are intended to engage with this very issue.

The second point, in relation to the range of horrors and threats through armed conflict, is salient to the themes discussed here:

These are real, grown up issues that need real, grown up attention by people who are committed — professionally — to trying to figure out what is wrong with their own ideas, and not what is right about them.

Designers are worryingly not involved in that process. Design is trying to prove itself, rather than disprove itself. It is the latter, though, that will serve the social good. (Miller, 2010)

Despite the rhetoric of interdisciplinarity, design research and design education research have become too convergent and discipline specific. Much like the towers of medieval San Gimignano, academic careers are built by adding layers to one's own discipline tower while attempting to demolish those of others. Trying to prove ourselves wrong may seem counter-intuitive to a field that is trying to gain credibility outside of its usual place in the food-chain, but it is also the mark of self-confidence.

If design, as a broad field, really does want to start doing some good in the world, it is essential that design develops a clearer voice in public discourse. We need to argue the case for design's importance throughout education as an integrated practice and be rigorous in understanding the context in which we operate. That means looking outward, not naval gazing. A glance through the abstracts of a great deal of research journals and conferences points to the latter. This is a terrible irony given the fact that many of us practice human-centred design research that expressly aims to avoid the effects of designing from within ivory towers.

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