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## Research Outputs in Art and Design

### Editorial

Material thinking has often been theorized as thinking about materials—how they are, or can be, constructed. Importantly, though, materials can inform and direct thinking. When we pick up a piece of clay, or work with sand, the material itself has an impact on the creative process. Similarly, the material of a building, or a machine (notwithstanding Le Corbusier's building as machine) or the materiality of a simple pen and paper, directly influence our creative processes, whether we are aware of it or not. The material of designing can be social conditions, or ethical dilemmas, as much as it can be wood, glass, or complex technological products, and this material in itself can offer up rich possibilities for innovation, creativity and problem solving.

The articles here tend to deal primarily with design and this may be partly because design is at a certain point in its trajectory where design research is undergoing a significant shift. Practice based and practice led research are emerging as important aspects of design research. At a simple level, practice based research has been defined as 'original investigation undertaken in order to gain new knowledge partly by means of practice and the outcomes of that practice' whilst practice led research 'is concerned with the nature of practice and leads to new knowledge that has operational significance for that practice' Candy (2006). Biggs (2004) sees practice-based research as that which 'prioritizes some property of experience arising through practice, over cognitive content arising from reflection on practice'. Biggs notes that practice led research can be seen from a perspective of the limitations of language, for example, in the difficulties in explaining to someone how to ride a bicycle; and cites Polanyi's notion: 'we know more than we can tell'. Practice based and practice led approaches have been taken up with different emphases and developed in diverse ways by different practitioners. Some of the papers in the current volume explore these in greater depth, yet clearly both pose problems for many in the fields of design research and practice.

Part of the difficulty is the historical trajectory of design itself. In 1989, Victor Margolin in *Design Issues* suggested the need 'to begin mapping the field of design itself according to a broadened definition, and to start organizing existing research into related areas' (Margolin, 1989). That such a field existed had been assumed or was asserted, in numerous texts before and since Margolin's call for its mapping, yet its existence as an entity was still not assured. In 1998, for example, Buchanan still saw the need for a statement that the field had emerged and for a significant justification of this position. His definition of the field was that it was constituted 'by a coherent subject matter, a body of methods and processes, and a community of individuals who seek to understand the operating principles that shape the field' (1998a). This emergence was through what he referred to as the development of a 'critical mass' of:

Individuals who are motivated to understand the nature of design and to act on their understanding in order to affect design practice . . . individuals within design as well as individuals in other disciplines, all of whom see the possibilities for new inquiry in what is surely one of the most important and least recognized arts of human culture. (Buchanan, 1998a, p 64)

The difficulty of understanding precisely what design is and what it contributes is not an esoteric problem with little impact beyond the discipline. It is a serious problem for nations. Design can easily be neglected or 'assumed' without being conferred legitimate status, compared to other areas like engineering and the like, as has been well noted in the recent Design Commission Report: *Restarting Britain: Design Education and Growth* (Pryce & Baroness Whitaker, 2011).

Adding to the development and complexity of design discourse has been the emergence of postgraduate programs in design. The introduction of a Masters program in design arrived after World War II (Margolin, 2009), and by the 1980s and 1990s departments of design in the U.S. began to develop research units (Bayazit, 2004). In a number of countries throughout the same period, design was repositioned from the vocationally driven polytechnics to the research orientated universities. This led to a considerable increase in discussion around the nature of design research in the academic fields, perhaps best exemplified by the Ohio Conference on Doctoral Education in Design in 1998. Buchanan (1998b) described this as exploring:

the foundations of design as a field of inquiry, the role of research in alternate models of doctoral education, the relationship between doctoral education and professional practice, and other issues that are central to the development of design as an emerging field of investigation.

The field of design thus constitutes a specific set of practices and rules and importantly a recognisable community that has awareness of themselves in relation to these things. The notion of a 'coherent subject matter' though, still presents difficulties. Margolin notes 'a lack of consensus as to how we identify the subject matter of design and, of equal importance, what design research is for' (Margolin, 2009) and Biggs (2004) notes considerable disagreement on precisely what design research is. Roth's (1999) article 'The State of Design Research' begins with the line: 'Design research is an activity in search of a definition.' This problem is partly caused by the fact that under the umbrella of design sits a number of diverse disciplines with different historical trajectories, skill sets, and practical outcomes. We might say one of the tasks of design theory is to recognise these differences whilst also making clear the aspects of each, which designates its place and valuable contribution to the discourse of design. It also suggests a versatile approach to what constitutes design research is necessary if we are to promote the discourse as a whole.

Chow & Jonas (2009) chart the historical trajectory of research approaches in design as moving from largely systems analysis, or first generation methods to what they refer to as 'the postmodernist attitude of "no methods"', and then on to scientific methods. Cross (2000) sees a cyclical attempt to 'scientise' design occurring in the 1920s, 1960s and again in 2000s. These of course are general accounts, and institutions in different countries have had their own emphases. It would seem however that currently we are seeing more research with a strong humanities approach. Often what works for one, falls short for the other.

When L. Bruce Archer (1981) gave the very broad definition of design research as the 'systematic inquiry whose goal is knowledge of, or in, the embodiment of configuration, composition, structure, purpose, value, and meaning in man-made things and systems', the language itself suggested a highly structured and clearly directed approach. However, the design process itself is a complex one, not necessarily following a simple linear plan, but instead, an often convoluted road of directed progress, backtracking, feedback loops, inspirational leaps of insight, and much more. It can sometimes seem that thoroughly structured research is undertaken, information collated, pictures formed and problems identified, and then 'the magic happens'. It is understandable, therefore, that straightforward 'question and answer' approaches that work in other disciplines can sometimes be problematic in design research (Biggs, 2003). The often complex nature of the process itself makes it clear why practice based and practice led research have emerged as useful approaches in design disciplines. Of course, strongly systematic forms of research can work well in design strategies, but equally, more flexible approaches can yield dramatically successful results. Allowing for, indeed, being attuned to, fortunate accidents, unintended connections and being open to

unexpected possibilities, and an emphasis on reflective practice, can lead designers in some situations to richer and more relevant solutions than more rigid methodologies might offer. Handing over some degree of creative power to clients or contributors can potentially offer up more ethical, but also more effective, solutions. Science based objectivist approaches can sometimes miss important constructionist opportunities.

This current issue of *Studies in Material Thinking* is an attempt to illuminate some of opportunities available in comprehensive and inclusive approaches to design research and, it is hoped, move the discourse towards a more informed and effective interpretation of research. The articles herein come from different disciplines within design discourse and present a variety of approaches.

Lisa Grocott provides, in her visual essay 'Designerly Ways of Researching', a particular approach to designing as research; through a personal practice she defines as 'figuring': a designerly way of drawing. This foregrounds the notion of 'becoming', rather than relegating design to the unnatural status of a rigid and fixed research process. This provides for a more personal speculative reflection, allowing for creative approaches to negotiating complex ideas. Grocott's figuring brings together the diagram and the propositional sketch to create a process that combines the exploration and expression of possibilities through the propositional sketch with the advantage of reflective aspects of the diagram. She evaluates this design approach through Cross's five characteristics of 'good research'; namely: purposive, inquisitive, informed, methodical, and communicable. Through this process, we begin to recognize the potential for 'deepening the designer-researcher's conversation with the situation' and what becomes clear is its potential as a valuable tool for designers exploring different strategies in design-research scenarios. We have a tendency to read words in a deeply reflective way, metaphorically approaching reading as a conversation (albeit one-sided) with the author. We question what we read, ask ourselves whether we have got it right, or whether the author has got it right. We pinpoint areas of agreement and disagreement, areas of little interest and areas of value. However, we scan images, taking them in quickly, almost without thought. They are silent. We get them, or we don't. We like them, or we don't. Grocott's visual examples ask for a close reading. They are a conversation, and as such, ask the mind to engage them in a different way to what we normally expect from visuals. I would strongly suggest they are worth the investment.

In 'Probious: Researching Australian Communication Design Through Collaboration and Design Practice', Yoko Akama and Carolyn Barnes describe their project to document the state of communication design in Australia in a more thorough, multifaceted and nuanced approach than mainstream surveys of the field have done. They describe the shortcomings of traditional academic researcher-driven approaches to research, and posit a more inclusive collaborative research methodology which not only allows for a viewpoint, but also for a creative involvement of active participants. This opposes the distanced objectivity, and objectification, of scientific research models. Akama & Barnes begin from a seemingly obvious yet clearly overlooked standpoint that the communication design sector in Australia would likely reflect the social, cultural and economic complexity of wider Australian society. This is followed by an in-depth discussion of their use of the 'cultural probe' in methodology, describing its value as a format that allows for participative agency, as well as noting its shortcomings and specific worth within particular contexts. Their work here provides an excellent opportunity for others to see the creative potential contained within certain research approaches for their own projects and for a more involved use of the cultural probe than we may otherwise have thought possible.

Karel Deckers' article, 'Existential Anguish Inside Architecture: The Interior in Between Encounter and Belonging', describes the process of 'de-familiarizing' students with the school environment, moving research out into the world to which students 'belong'. Utilizing the concept of *Unheimlichkeit*—in a sense 'uncanny', or to be familiar yet estranged—students at St. Lucas School of Architecture are invited to explore the possibilities of a 'frictional' design approach that emphasises the personal experience and its relationship to architecture. Through notions such

as mortality and empathy, architectural design is challenged to integrate the human more closely. This is an approach to material thinking where what 'matters' is seen as the material, existentially encountered through the immaterial. Deckers describes a model with student-researchers and teacher-researchers engaged in a practice and theory driven approach to stimulate unintended exploratory results rather than working towards a set of preset or fixed outcomes. An openness is developed to experimental outcomes which are not bound by traditional disciplinary limits.

Keith Robertson notes key historical developments of design and design research in the Australian university system in his paper 'Building the Design Profession Through Honours Research'. From this, he outlines the structure of Swinburne University's Honours course in design, through which students tackle research through a number of diverse methodologies. These include, as well as secondary research, questionnaires and surveys, interviews, case studies, focus groups, observation, content analysis, and cultural probes. Robertson makes an argument for design—particularly communication design—as a distinct practice from art, noting that with such different purposes and outcomes, design requires evaluating by an entirely different set of criteria. Robertson presents design as deeply embedded in social contexts, taking up Frascara's call for designers to 'incorporate a social dimension' in their research work. Robertson's approach highlights the need for design that makes a difference, that is less tethered by the philosophical tensions which encumber many institutions, and is premised by 'doing things'. The work is inspirational in its simplicity and directness, yet Robertson adds valuable functional detail for others wishing to follow this path.

Paul Rodgers and Craig Bremner's article 'Alterplarity - "Alternative Disciplinarity" in Future Art and Design Research Pursuits' brings a quite different and somewhat polemical viewpoint to the issue of design research, which they see as springing from the fluid and mutable nature of contemporary design approaches. The authors reject the 'disciplinarity' of traditional disciplines (a perspective reminiscent of Foucault) in favour of an alternative disciplinarity; what they term alterplarity. Seeing the digital as a key modifier of models of design thinking, they call for a research practice that responds to the philosophical, social and academic repercussions of globalisation. The main focus of this paper is product design, but removed are the traditional boundaries of the discipline, and instead is theorized a product design with an emphasis on flexible practices without boundaries. This is proposed not merely as a shift in how to approach product design research, but instead as a whole different way of thinking design. Rodgers & Bremner situate their argument within the historical framework of what has been seen as design research, and with particular respect to the movement from disciplinarity to interdisciplinarity to transdisciplinarity, paving the way for their notion of alterdisciplinarity. Within this contemporary perspective, the traditional role of researcher gives way to what they term the irresponsible researcher—a researcher invested with their knowledge of 'not-knowing'. Rather than presenting a dense philosophical enquiry, however, the paper demonstrates their approach with examples from contemporary design practices, making reference to each of the characteristics they see as significant features of alterplarity.

Lindsey Nelson presents a pragmatic and vital account of research and development strategies for the engineering design area. Her article, 'Research and Development Strategies for Innovations that Alleviate Poverty' describes the collaborative potential of design schools, Government organizations, and NGOs to work in real and measurable ways to assist people suffering poverty. Nelson sees as crucial, collaborative approaches, which involve users, communities and professionals. This avoids the pitfalls of the engineer with little real experience of poverty, placed in a position of designing for a stranger from an altogether different world. Her study highlights the right of participants to being involved in the decision making process. Nelson produces a useful comparative analysis of two case studies of successful development projects—International Development Enterprises and International Development Design Summit—to demonstrate how significant, long-term change is possible. These development initiatives are explored through a framework of wellbeing, which Nelson proposes as a powerful model for ethical design innovation and analysis. The key aspect that comes forth from this study is the importance of deep involvement with the communities affected by the outcomes of the design work.

The authors here present a range of different approaches to design research, but all have one thing in common. There is a strong sense of the importance of the social context of design and the responsibility and potential of designers to act within this context. In a world where we are becoming cognizant that changes must be made in our approaches to designing for our future, or the consequences might be catastrophic, this is a refreshing and optimistic portent. It is equally important to recognize that reactive approaches which promote one research philosophy and process, whether positivist, or social constructionist, only serve to impoverish design discourse.

Traditional research has long been equated with quantifiable, repeatable, and systematic processes and results. When considering practice based or practice led versus traditional or scientific approaches, an either-or approach works against the rich research potential for a young discourse that needs to recognize the strengths in its diversity of disciplines, approaches and outcomes. Practice led and practice based design research provide the opportunity to offer up much more than traditional forms of research can offer alone. That design processes do not always fit with scientific methodologies is not a weakness but a strength and an opportunity.

It seems sometimes the difficulty is more one of language, when discussions turn to questions of the like: 'Is practice led research, research at all?' If research has to fit with specified set meanings then perhaps it is not, but then language is not a fixed and immovable object—it is mutable and changes constantly. I am not downplaying the huge significance of language, but civilizations are unlikely to fall into crisis if language changes. Civilizations might fall into crisis because of climate change, or a host of other problems we may be dealing with in the not too distant future. Designers are needed now more than they have ever been in the past, and we need to make the most of our opportunities to strengthen the discourse and our relevance and effect in the world.

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