ARE WE THERE YET?

INSIGHTS TO SUPPORT THE USE OF THE REFLECTIVE PRACTICE METHOD FOR EXPLORATIVE PRACTICE-LED DOCTORAL RESEARCH INTO REAL-WORLD DESIGN PROBLEMS.

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ABSTRACT
This paper concerns the use of design thinking in practice-led doctoral design research. It examines methodological appropriateness for research *through* design.

Much practice-led design research begins with the aim of improving knowledge and understanding for design practitioners involved in real-world problem-solving. However this can be compromised in both its applicability and/or relevance as the context of the practice or the articulation of the theory/practice relationship becomes esoteric to those other than design theorists.

It is our observation, as supervisors and examiners of Design PhD students, that practice-led design researchers often get caught up in a research paradigm and process that reduces their project to a post-hoc rationalisation of the problem, the methodology and resulting knowledge; creating an output that alienates the intended primary audience.

This paper examines methodological appropriateness for practice-led design research. It is based on a correlation of critical literature and reflection on several practice-led doctoral design projects. It considers the theoretical frameworks and research processes to support exploratory practice-led design research by expert designers. It argues that for this type of research the research question(s) and research design should co-evolve in order to generate new insight and understanding of future design directions; documenting this evolution forms a vital element of the research content.

Keywords: Exploratory, Practice-led, Design research, Expertise, Problem, Solution,

Audience: Design Thinking

1 INTRODUCTION

Designing, in the context of contemporary problems, or in the context of society based design projects, involves moving beyond traditional design discipline boundaries. Design practice has always relished the opportunity to expand its frame of reference; yet, in the world of design practice research, we have not fully clarified the theoretical framework, nor resolved methodological questions about conducting and reporting practice-led design research, particularly where this relates to explorative research projects *through* design (Frayling, 1993). This paper does not concern the categories of research *into* or *for* design, where discursive, or empirical evidence-based, research is undertaken in order to generate new knowledge using a process of conjecture and refutation. This paper concerns the explorative nature of research *through* design, which places the emphasis on conjecture and concerns the relationships between the problem, the solution, the audience and the designer.

The 'journey', implied by the title 'Are we there yet?', concerns the development of a more complete understanding of the various natures of practice-led projects, which need to be mapped. It is surprising, given the importance of this subject for art and design, that a comprehensive map and a theoretical framework have not yet been produced. The most recent review by the AHRC; 'Practice-led research in art, design and architecture', conducted a thorough study, reaching the important conclusion that, 'design processes are too open-ended to answer highly specific theoretical questions' (Rust, et al. 2008); this review did not address the appropriateness of methodological foundations for practice-led research, which is the issue discussed in this paper.

Practice-led doctoral projects can deliver new content knowledge about critical issues facing society or process knowledge about the methods by which it is carried out. Hybrid conclusions can also arise about the relationship of

content (problem, data and research question) and process (method). Here, the relationship between new knowledge and its intended audience is particularly important.

Design practice seems to thrive on ambiguity in complex projects and has developed a procedure that suspends judgement (making design choices) in order to maximise creative opportunity and optimal solution generation against time (Cross, 2006: 54). Research conducted *through* design can lose this important creative procedure as the researcher attempts to clarify and rigorously pursue an epistemological, hermeneutical and ontologically robust research design or theoretical framework.

In order to design effectively, practice-led researchers need to have the confidence that their designing activities reside within a theoretical framework that allows the methodology and research question(s) to be held in suspension, in order to explore the subject, whilst leading to the generation of new knowledge and understanding of future design directions. In order to move toward this situation we need to map the process methodology better.

To help clarify the basis for the ideas put forward in this paper it is necessary to first state definitions for the operational terms referred to in the title:

> The reflective practice method for practice-led design research refers to the paradigm of design as reflective practice and the action-orientated theory of reflective inquiry (Schön, 1983 & 1987). Reflective practice methodology is an epistemology of practice focusing upon acts of intelligence within situations of uncertainty, placing technical rationality (Simon, 1969) within a broader context of reflective inquiry.
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> Real-world design problems are defined here, as problems that address human experience of both physical and virtual contexts.
>
> Explorative practice-led research is used here to refer to researcher's who apply critical practice to understand future directions for design (e.g.: Dunne 1999, Raijmakers 2007 and Singleton 2008).

To investigate the relationship of these terms, this paper: reviews literature on design methods research and the paradigms that support different kinds of problem solving activity; it considers questions raised by the paradigms of design activity; and reflects on the relationships between, reflective practice (Schön, 1983), skill acquisition (Dreyfus and Dreyfus, 1980), the concept of 'Flow' (Csikszentmihalyi, 1988 & 2002) and craftsmanship in society (Sennet, 2008).

2 CONSIDERING THE PARADIGMS OF DESIGN ACTIVITY FOR PRACTICE-LED RESEARCH

There is general consensus that design methodology has developed two fundamentally different paradigms: 'rational problem solving' (also known as technical rationality) and 'constructionism' (know as, design as reflective practice).

Dorst (1997) believes the major difference between the two paradigms lies in their epistemological stance, which affects methodology and methods of action and assessment. Rational problem solving requires that something works and functions correctly, whereas 'design' requires that something is perceived as phenomenologically better and provides added value. Those working from the perspective of 'design': value the experience of people; value the quality of the relationship and interaction between a person and a product; aim to make situations 'better'; and respond to the shifting impermanence of life, people, situations and problems. Those working within the paradigm of rational problem solving focus on: the functioning and performance elements of the product; aim for 'optimisation'; and respond to a constructed bounded aspect of life, which works under the premise of permanence or significant stability.

When reviewing research *through* design we should see clear evidence of either design as technical rationality or design as reflective practice or an appropriate combination of both. Reviewing these paradigms raises a number of questions when we consider their use in practice-led doctoral design projects.

The aim of design practice is to develop solutions to problems not knowledge. Although the exploration and output of reflective practice may develop insight into a specific problem or an aspect of society, can we consider this insight as a research contribution and within the context of a PhD research project how is that insight claimed as a contribution to new knowledge? How many projects need to be run in order to validate and test the results of *content knowledge* if we refer to the tenets of technical rationality? When developing *process knowledge* through a practice-led project, would rigour require that the researcher apply the knowledge in the context of another's practise to test its general relevance? Can we treat the content and process outcomes of practice-led design research projects as replicable; or are we confusing problems, methods and audiences and knowledge unnecessarily?

Neither Simon (1969) nor Schön (1983) developed their theories as generators of new knowledge. Simon's theory aimed to bring greater rigour to the process of problem solving and Schön sought to bring greater relevance to professional's who operate in a situational context where the problem is unclear. Is the use of these theories in the context of doctoral research taking them out of their operating context?

Perhaps the way forward is to see the generation of knowledge and its articulation as a meta-process that oversees and houses the activities of design practice. In the same way that Schön claimed that his theory placed rational problem solving in the broader context of reflective practice, perhaps practice-based doctoral projects require a broader theoretical framework to contain the data generated by design projects.

Another question emerges if we consider the implications of reflection-in-action. Reflection-in-action implies that one is aware and engaged; the word reflection describes the act of careful consideration and dialectic. However, awareness is not a binary event (Austin, 1999) and the role of awareness in reflective practice could be made more explicit and explored further. When one's awareness has disengaged from the task situation reflection-in-action has ceased, the conversation with the environment has broken-off, and therefore, one is no longer designing. Schön's description of designing - as a reflective conversation with the materials of the situation - is very insightful but what is not highlighted is how temporal that connection can be: the mind often drifts away from a focused task. This raises two questions: what role does the practitioner's awareness play when undertaking design activities (Spencer 2008); and, how can the expert designer function simultaneously as skilful practitioner and researcher?

Dreyfus and Dreyfus (1980) proposed a five-stage model of the mental activities involved in skill acquisition. They argued that 'skill in its minimal form is produced by following abstract formal rules, but that only experience with concrete cases can account for higher levels of performance' (Dreyfus and Dreyfus, 1980: 5). This theory is opposite to the theory that proficiency increases as one moves from the concrete to the abstract. The five-stage model illustrates the progressive changes in a performer's ways of seeing their task environment. The five skill acquisition stages are:

Novice: the skill performer initially learns to recognise objective facts and features, relevant to the skill without the benefit of experience.

Competence: the performer only becomes competent after considerable experience actually coping with real situations. Competent students understand their environment, are able to identify recurrent situational patterns and develop guidelines.

Proficiency: the proficient performer has increased practise of a wide variety of whole situations and determines situational patterns and their meaning in relation to the achievement of a long-term goal.

Expertise: previously the performer needed some sort of analytical principle to connect their grasp of the general situation to a specific action. The expert performer has a vast repertoire of experienced situations and each situation they encounter immediately dictates an intuitively appropriate action or fluid performance where all elements are involved in a single interdependent transaction. This is similar to the concept of 'Flow' proposed by Csikszentmihalyi (1988; and 2002) and the description of the nature and levels of skill in 'craftsmanship' by Sennet (2007).

Mastery: is associated with intense absorption and takes place when the expert, who no longer needs principles, can cease to pay conscious attention to his performance and can let all the mental energy previously used in monitoring his performance go into producing almost instantaneously the appropriate perspective and its associated action (Dreyfus & Dreyfus, 1980: 14).

Is it possible to directly relate Dreyfus and Dreyfus' levels of skill acquisition to the activity of designing? The difference between the novice and competent performer is note-worthy. The competent performer is intimately involved with shaping their understanding of the task and the resultant actions through reflection and active interpretation. This stage seems to describe some of the important characteristics of a reflective practitioner under the paradigm of design as reflective practice. However, the masterful performer's absorption seems to deny the possibility of reflective practice to reveal knowledge and experience about the design process.

For Schön, the central concept in designing was the use of reflection-in-action to investigate the breakdown of knowing-in-action. Schön describes designing as occurring in situations of practice that are ill defined, uncertain and complex, where goals are unclear and solutions are discovered. There seems to be a significant dichotomy between the performance of 'expertise', where performance flows intuitively as the performer encounters the situational context and Schön's description of design activity and the reflective practitioner's situation of practice. If a person's performance of a task matches the description of 'expertise' or 'mastery', could it be claimed that this person is not performing design as reflective practice? An individual may be undertaking a creative activity but due to their experience of similar situations, there is, for them, no problem solving and no challenge. In this situation a performer would be applying their design expertise gained through numerous experiences, which has the effect that they no long design. Is this an over simplification, or does it, by implication, require us to reconsider, and think carefully about, the moments of 'design' activity within the broader activities of a professional, or is Schön's description of designing too limiting? Perhaps the real achievement, and what marks some designers out as expert, is their ability to reframe the overall activity in such a way as to create challenge and ensure they are required to reflect-in-action, problem solve, employ creative thinking and maintain their engagement in design as reflective practice. This of course creates a significant challenge for the practice-led doctoral candidate.

Dorst (2003) applied Dreyfus and Dreyfus' model of the stages in skill acquisition to distinguish five different ways of perceiving, interpreting, structuring and solving problems. He highlights that these fundamentally different ways of looking at and relating to problematic situations can co-exist in a design project: 'nobody is an expert on all aspects of design, on some problems we might be novices, in others we might be competent, or expert' (Dorst, 2003).

While Dorst does not address concerns about the relationship between skill acquisition and design as reflective practice, he showed that the level of expertise potentially is a central notion in the description of design practice: the choice of paradigm for describing and supporting design processes depends on the level of expertise that the designer has. The rule-following behaviour of the novice and the advanced beginner needs to be described within the framework of the rational problem solving paradigm. The behaviour of the competent designer and higher can be described using both paradigms, with the reflective practice paradigm becoming more relevant the closer we are to expert behaviour (op. cit.).

3 CONCLUSION

Schön and Cross independently concluded that design problems and solutions emerge together. The ill-defined nature of design problems means they cannot be predicted in advance, thereby justifying the argument of this paper that the relationship between design practice problems, methods and knowledge is commutative. For exploratory practice-led design research by expert designers the research question(s) and research design should co-evolve in order to generate new insight and understanding of future design directions. The authors propose that this also concurs with the intended audience for which resulting knowledge is derived and that reflective practice knowledge generated in this way has the greatest potential to influence design practitioners.

The research design template of choice to support exploratory practice-led design research has emerged from several doctoral projects over the last decade and includes: the development of interlinked essays and design proposals, which proceed simultaneously *as part of the same research process*, for example:

> The two forms of research process continually interact. Design processes are too open-ended to answer highly specific theoretical questions (Rust, et al. 2008) but if ideas intended to inform design are not applied in some way, the relationship of theoretical ideas to design practice remains speculative. Likewise, the design proposals serve as a *vehicle* for the construction of the essays; problems encountered through the design process require the researcher to expand their knowledge, seeking out new ideas and techniques, and this process gives shape to the essays (Singleton 2008).

The development of the essays and design proposals are *both* considered to be parts of an action research process, documented and guided through reflection *on* and *in* practice (Schön, 1983). Singleton states:

> As far as I am aware, this perspective - the development of written work as action research - is novel in the educational literature, but the design research doctorates that follow this model suggest that this is a viable strategy for the development of the thesis (e.g. Dunne, 1999:15). The interaction between the two forms of research is also the subject of reflection and forms part of the final thesis (Singleton, 2008).

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Acknowledgements
The authors would like to express their thanks to Ben Singleton of the Centre for Design Research, Northumbria University for his contribution to this paper.

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