Embedding research within the context of architectural practice
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Introduction

Architects design buildings and, in the practice of architecture, the visual perception phenomenon of figure and ground is neatly divided between the artefact under consideration – more often than not a building – and its surroundings, or context. The architectural design process is predicated on producing a physical construction. In the view of many who practice architecture to contextualize surmises the necessary decisions which respond sympathetically or otherwise to the artefact's surrounds.

In the main, architects concern themselves with practicing their profession, leaving research into architectural practice within the established research domains of history, pedagogy and sociology, undertaken by investigators from those fields or architects working through those disciplinary prisms rather than researching as practicing architects.

This paper discusses a practice-based research that is developing through the pedagogical approach of 'embedding' doctoral students within the context of professional architectural practice. The research program evolved in response to prior involvement in practice-based research by authors Burry and Maher which suggested a serious gap existed in understanding innovation and change between academy and profession. The program is developing a new context within which to incubate new researchers, new research questions and methods as well as solutions, particularly through the inclusion of the social sciences. At the same time the development of the program demonstrates how applied research depends on research contexts, such as: the character of the profession being studied; the kinds of research questions which arise from professional and industry sector concerns; and the challenges that innovations present in demanding work place changes.

Contexts are driving forces, particularly in applied research and research into architectural practice requires consideration of contexts at varying scales, including the office, the profession and the industry sector. The practice of architecture and its role within the
broader construction sector is similar in a number of countries. This research is being undertaken in Australia and we anticipate findings that will be applicable in similar contexts internationally.

The professional context

The practice of architecture was established as a profession during the 19th century partly in order to satisfy the needs of the industrial age as it generated new specialised buildings from train stations to factories to the housing for the workers of new industries. Simultaneous with these new types of construction was an increase in regulation which occurred during a period which when combined with a low literacy among builders placed architects in a position as the disseminators of information between clients and contractors; an identifiable role for professionals (Saint 1983).

The increasing complexities in building types, components and services required for modern structures have continued to expand the specialist roles of architects and the services architects offer (Gutman 1988). At the same time there are now more than thirty separate disciplines and areas of expertise that may be involved in building design and construction and with whom architects must share information, knowledge and importantly, the pool of fees. Unlike the professions of law or medicine, the professional practice of architecture is formed from a weakly defined discipline (and this in not intended pejoratively); it is a liberal art, not specific or domain dominant. One effect is that the architect's traditional position as chief interpreter between the client and all other parties is under threat. Indeed, a recent US governmental report into the costs of construction encouraged owners and operators to take greater control of the design and procurement process for their buildings (Gallaher et al. 2004).

Architecture is a practice in which the designer is removed from the making of the artefact: architects design buildings, but rarely do they make buildings. Rather, architects make the descriptions through which others interpret what is to be constructed. This separation, between designing and making, is mediated through the tools of practice (which are never neutral) and the means and modes of transmission. For the philosopher, Nelson Goodman (1968), architecture is a peculiar case in this regard. He distinguished between creative practice in the fine arts, where authorship and execution are united, and practices with a discernable notation such as music where authorship and execution are separate. Architecture for Goodman (as distinct from the vernacular), although not built by the hands of architects, remained connected with their authors; so a copy of the Sydney Opera House in Calcutta would not be accepted as equal to the original even if it was built from the same drawings and to the same specifications.

For many architects (and clients) though, Ayn Rand (1943) provided the prototypic modern architect in Howard Roark, the hero of her novel The Fountainhead – an individualist who will not compromise his artistic integrity – fictitious but colloquially understood to be modelled on the American architect Frank Lloyd Wright. Such a figure persists pervasively, both in practice and pedagogically, and is still found in training in the thematic design studios which form the core curriculum in schools of architecture, as students defend their designs, and by implication, themselves, before a panel of critics.

Unsurprisingly, there are many paradoxes to be found in a profession combining a 19th century foundation, with 20th century mythology and 21st century challenges and the scales of contexts in which it operates. Famous axioms surround the practice of architecture: "God is in the details" (Mies van der Rohe 1959) and "form follows
function" (Louis Sullivan 1896). Probably truer to the ambition of many architects – to strive to be original and to continually experiment and test hypotheses with each new building – was captured by the Brazilian architect Oscar Neimeyer who often reiterated, "Architecture is invention". The architect is expected to be both professionally "in control of all steps of the work" while simultaneously and privately relinquishing control in favour of experimentation (Spiller 1998).

In an economic sense and at another scale, architects contribute to the value of a national economy through the construction sector. By way of example, in 2003, construction contributed 5.1 per cent of gross domestic product in Australia, 5.4 per cent in the United Kingdom and 5.5 per cent in Canada, in each case to the value of tens of billions of dollars. The construction sector is often described as an industry (either the construction or building industry), however it is not industrial in the sense of traditional hierarchically organised industries typified by those in manufacturing. Rather, construction is a project-based industry with three main components: supply networks; specialist project-based firms; and owners, managers and property developers. Those who operate in the sector range in size from the relative few with global coverage, in the case, say, of a large building material supplier, to the many numbers of people employed in small, regional firms often comprising sole contractors. For instance, one third of architects in Australia describe themselves as sole practitioners. Typically, teams form and reform by project. This provides a working environment that is often highly adversarial in nature as participants seek to shift exposure to financial risk which in turn has an effect on the propensity to undertake research in the sector (Rigby, Dewick & Bleda 2005, p. 79).

The research context

Throughout the history of the architecture profession, there has naturally been reciprocity between architectural practice and schools of architecture. Practitioners have been central, through teaching and mentorship and contributing, most importantly, the body of built work for the acculturation of the discipline – its 'built literature' (Hawkes 2000). Academic architectural research is predicated on having this stock of artefacts. 'Architectural history and theory are more easily categorised as research territories than the processes that make them possible' (Finch 2005), partially, as mentioned, because in developing a body of research the discipline has borrowed from the established domains of science and the humanities (Hawkes 2000).

Yet with the exception of the technical aspects of building science issues it has proved difficult for the academy to contribute significantly to research and development within practice. Research in architecture is often seen by the profession as unrelated to the practice of architecture, and so when considered from practice towards the academy, a not uncommon argument is that the process of design work itself necessarily constitutes research. In the context of professional practice though, this is often not formally conducted and reported research. Indeed most current research and development is not undertaken by architects but by manufacturers for architects, in the service of material and component development (Finch 2005). One effect is that architecture practices are unlikely to sustain dedicated research and development programmes, nor expose themselves to externally constructed formal research. In fact practicing architects express little interest in formal ongoing education (63% of Australian architects were not interested in any form of professional development) (RAIA 1998). On the other side, from the academy towards practice, academic researchers have a somewhat sullied reputation for having little understanding of what actually occurs in practice. In the 1960s, research directed from the academy was aimed at delimitating the design process, by providing architects with
rationally defined procedures to follow in practice that in reality operated very differently from the academy. More recently, at the broader scale, Manley et al. (2001) reported that the largest output of public sector construction research in Australia was academic journal papers, finding little evidence that formal research finds its way to construction industry practice; concluding “industry is yet to become a demanding user of research output”.

Project-based organisations pose special challenges to researchers. Literature on the subject indicates that, although much innovation occurs within projects, little is transferred from one project to another or from projects back to sponsoring organisations of the participants (Gann & Salter 2000). This can occur when the questions or purposes between projects are dissimilar, the findings could not be generalised, or subsequent projects do not include members of the previous team and/or that the relevant skills were not available. Additionally, systems and structures do not exist yet to transfer new knowledge gained from projects across the relevant disciplines or through associated industries (Taylor & Levitt 2004). Lawson et al. (2003) found that even when architectural firms work for clients who repeat commissions, lessons learned on projects are not channelled into similar projects, partly due to organisational contradictions between what the firm intends to do, and then what the members of the office aspire to and actually do on future projects, records of which are not channelled back into office systems.

This means that deep, broad and distinctive understandings of architectural practice have not evolved or at least are not broadly enough shared within the profession. Formal structures and processes need to be established, or greatly enhanced, to ensure that research insights are transferred, debated and accumulated, for instance, to capture ‘tacit’ or inexplicit disciplinary knowledge.

An embedded practice-based research program

This program was conceptualised in 2003 and initiated in 2005. It is based within a practice-based research stream that originates from project work undertaken for professional practice by authors Maher and Burry in the Spatial Information Architecture Laboratory (SIAL) in the School of Architecture and Design at RMIT University. These projects were propagated from our research into the description of complicated geometries for construction and represent cases in which professional architects and engineers shifted isolated problems from the context of their office into the academy. Correspondingly, the solutions we offered differed to what might be expected in the context of practice; the description of a sculpture for example not via drawings but as data for fabricating machines contained within a spreadsheet (Maher, Wood & Burry 2003).

It was evident that the innovation occurring in the research context suited architectural practice as firms began to view the facility as a consultancy from within the academy. Our role as academic researchers undertaking this type of research was opened for discussion in a symposium initiated with the profession to discuss these projects. We suggested that the accumulation of new processes, their associated tools and the implications of their use were initiators of change in the workplace and proposed a broader and deeper investigation.

From the symposium and in conjunction with four firms we developed a research context for this program in which the skills from the academy are shifted into professional practice. The research program has three broad aims. The first is to investigate routes to design practice innovation in different practice contexts. The second aim is to create a better understanding of the factors that lead to change and innovation in architectural practice
and the third aim is to initiate a forum composed of key members of each of the participating practices for dialogue leading to new areas of research and development in the context of the construction sector.

There are three main groups participating in the research program: students, academic researchers and supervisors, and industry partners (who are broadly the participating organisations but more specifically nominated principals of the firms involved). Each group has a clear role in the research. The set of four students are central. They have completed their professional degrees and are enrolled in PhDs in the School of Architecture and Design, which is an under represented level in our discipline. Their role is to be explicitly independent 'participant-observer' researchers whose raison d'etre is to criticise rather than conform.

The students are divided neatly into inner and outer subsets: two of the group were already working in firms that became industry partners. The other two were new to the firms that they have become embedded in. The students' academic supervisors, who meet with the students either face-to-face or by teleconference for a seminar session every week to collectively discuss their research, explore not only how to best guide and manage the students' individual research but also how to optimise the level of collaborative research which can be conducted alongside and interspersed with the enterprise as a joint and unitary research project. The industry partners involved in this programme are unusually academic and supportive in their approach, gaining for themselves 'practitioner-researchers' roles. They have a strong sense of the importance of the independence of the students in identifying and formulating their own research problems and direction.

Twice a year (in May and October) the students present their work to panels of invited academics and practitioners at RMIT University's long-established Graduate Research Conference, alongside the community of post graduate students in the School of Architecture and Design.

Practice contexts

The research is being conducted in four practice contexts. Architectural offices are usually categorised by size of employees. The majority of practices are small (less than seven) as mentioned, most architects often work either in sole practice or in partnership, followed by medium (up to 50, and can include some allied disciplines) and then large firms of over 50 employees. Although firms can be categorised by size there is a recognition that any practice has at one time usually been of another scale, commonly embodying a structure which could potentially evolve into the next size.

Even the small office, [is] capable of being subjected to the organizational pattern of the large, for small and medium were commonly regarded as evolutionary stages in the history of an individual office, whose professional destiny it was to grow to the largest possible size (Boyle 2000: 318).

Three of the four architectural practices in which the students are embedded are easily distinguished within these categories. The smallest practice is no longer 'small' beginning with around four to six full time employees and recently increasing to eight. There is a medium practice of around twenty five staff with various disciplines involved (including interior design and urban planning) and a large multi-disciplinary design firm that operates on a global context with 7000 employees. The exception is the fourth firm which operates
as a single entity from two interstate offices. In this practice context, the dispersed directors all collaborate on projects via email, phone and fax.

Research implementation

Much of the structuring and managing of the programme, especially in these initial stages, has focused on embedding the students in their respective practices. In tandem with developing original and interdisciplinary approaches to their research, the students are establishing unique positions for themselves. These roles are being co-created by the students and their co-workers, with academic and industry partners' support. In a certain sense, the students are simply everything that a regular worker might be in that practice, and more specifically a conscious and analytical participant and a potential agent of change. However, in another sense, the students' roles turn conventional relationships on their head. Instead of entering a practice, either as a novice or as a dutiful worker to focus on projects and associated responsibilities, adapt to established work practices or fit into the workplace socially and professionally.

In attempting to unlock the project-centred nature of practice-based research and develop links between the different practice contexts we have integrated a social science researcher (author Nelson) to train and advise the program on the potential of small-scale ethnographic investigations to inform their research into work practices. This social sciences context provides novel theoretical frameworks and methods to both analyse architects current practices and workplace changes brought through the implementation of new methods, techniques and practices introduced by the students.

Because of the high expectations of the students, from industry partners as well as the academic structures, they have been provided with a supportive research structure that incorporates a sense of community. Given the collaborative nature of the program, support systems for the students are intense and extensive and include: potential for constant interaction on an online editable web-space (a Wiki), weekly seminars for the researchers/supervisors with the students; regular sessions with the industry partners to monitor the students' progress and work plans; a yearly review workshop, and biannual presentations to their academic peers.

At the end of the first year of this program, the industry partners began to adopt the view of the academics of the research as a matrix and appreciate that they would benefit not only from the research conducted within their particular firm but also from all four embedded students and the wider collaborative research which is being conducted by their supervisors alongside developing the program. Thus the matrix of research to which the 'practitioner-observers' contribute is being implemented through a hybrid context of critical practice and social science.

Each student has developed an individual stream of research. At this level there are four investigations; i) a cultural critique of the digital in practice – exploring the implications of existing design strategies of an architectural practice through augmentation with digital design methods; ii) the role of the storyteller – between design an discourse, a study of the ideation process; iii) communication, translation and negotiation through modes of representation that are becoming increasingly digital; and iv) a set of tools for urban analysis and design advocacy for use within architectural practice.

As practitioners, the students have all completed projects applying tools developed in the laboratory to the practice context. As observers they have begun recording the changes in
the workplace, using their embeddedness as opportunities for contextual interviews, and with active participants around the research.

Conclusion

This program is a pilot project, which has been funded as a potential model for an ongoing structure to inform more expansive and longitudinal studies on architectural practice – to bridge the gap between professional architecture and academic research and training. SIAL is a transdisciplinary research unit and social science methods form a strong aspect of the interdisciplinarity of the program. The social science aspect of the research spans all projects, to prepare strategies, such as interviews and surveys, to investigate individual investigations as well as commonalities between the students' project work. Therefore the pilot expands beyond regular architectural research in two ways, in seeing practice as a serious object of research and by incorporating the approaches of other disciplines in the service of investigating architecture for the sake of architects. The model of socially embedding students within architectural practices is designed to deliver a rich analysis of the multi-contextual practice of creating constructions, artefacts, as well as creating a research model, itself a contextualised artefact.

References


to cite this journal article:

ISSN 1466-4917