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Theory in practise:
Developing process and seeking promise of the embedded architectural PhD

Abstract

In 2016, a large Australian research university established an industry-based doctorate program to leverage research in a practical setting. Partnering industry with academia through embedded research, the program was crafted to deliver real-world solutions to challenges facing a range of fields. This paper's author joined the program as its first participant in the faculty of architecture, with an industry partner involved in the design of large-scale city-shaping infrastructure.

While research being undertaken within an architecture firm isn't a novel concept, research typically undertaken by practitioners often focuses on factors which are changing practise (such as BIM or virtual reality), design strategy implementation (such as sustainability or material study), or history and theory. Some firms have research arms to explore new technologies, push the design envelope, or enhance function of practise, but these are often executed in the pursuit of projects. As distinct from these approaches, this paper explores the role of academic research in modern architectural practise and the method being employed to conduct research embedded in practise, through a self-reflexive examination of work executed for the present research. Negotiating the lines between research in *and research* of *practise, the paper seeks to establish an understanding of what it means to be an embedded researcher in architectural practise.*

Research which focuses on architectural practise, highlighted in recent years by sociologist Albena Yaneva's ethnographic accounts of architectural production, frames the profession as a distinct entity, whose process and culture is unique. The work frames architectural production as something which cannot be understood through ex post facto *analysis of the physical resultant. Rather, the design process is as much, if not more so, what defines the profession. Through embedded research, the author's PhD becomes a mechanism of advancing architectural understanding through real-time analysis of the process of design in the modern firm, analysis of the inputs that yield design, and a reflexive consideration of how design moves from concept to reality.*

One profession, two facets

In 2015 I received my initial architectural license, representing the culmination of an eight-year journey which included five years of architectural education, three years of carefully curated work experience, and the successful completion of seven professional licensing exams. A gruelling process, it was expedited greatly by my good fortune to work for a small firm where I was able to experience the full spectrum of project phases, allowing me to complete my required industry-based hours representing a cross-section of practise as quickly as possible. Working for a small firm, I also had flexibility to pursue other areas of interest independent of practise as the workload was rarely all that taxing.

Following the completion of my Master's thesis in 2013, which built off work I had done while studying in Australia, I was invited to speak at a conference in Queensland soon after graduation—my first experience with institutionalised architectural research. While at the conference, I met an array of architectural academics, broadening my understanding of what research could represent to a profession known primarily (to the public) for designing buildings. They encouraged me to pursue academic research and continue to present papers, which I did for a few years while working toward my licence. For me, research represented a distinct departure from architectural practise: research was always independent of practise—a side foray into areas of interest of historical focus which had no bearing on my day-to-day work.

While my thesis had been a research project which was then leveraged to inform design decisions for an architectural proposal, overall the connection between practise and research (outside of an academic setting) was a hard one to conceptualise. The struggle to rationalise the disparate concepts of architectural practise and theoretical research, not necessarily tied to immediately tangible outputs such as material development, improvement of processes, or historic contextualisation, meant that—while both practise and research were understood—a productive link between the two eluded me. And I doubt I existed in the minority among architects in this conceptualisation.

Fast forward a few years and an opportunity presented itself to return to Australia in the form of a partnership forged between the architectural industry and academia. A university and a large architecture firm sought to facilitate collaboration through a practitioner who would engage in architectural production while conducting research on architecture and polycentrism in the development of cities. Vague as it was intriguing, the call for interest was all I needed to motivate me to undertake an opportunity that, in my mind, would fuse the previously divergent architectural concepts—practise and research—into a single pursuit.

The context for the research being undertaken as part of the PhD came to be a piece of large-scale public infrastructure currently being designed as part of a city-altering transport project. It is simultaneously distinct in context, yet part of a broader cross-section of similarly scaled urban infrastructure projects which are increasingly being undertaken globally. With the increased demands of large-scale architectural projects—like the one being leveraged as a case-study through the embedded research—the field of architecture has morphed dramatically, with the role of the architect responding to the required expertise and accommodations necessary to realise the projects.[1] Given the protracted timeline of such projects, the expansive network of actors which shape the projects (including those with relevant global contexts), and the volume of material produced in the execution of the project, there is much data to ground the research. The utilisation of a live, multi-year case-study, in tandem with the participant/observer role, allows for a comprehensive examination of the arc of the project development, with the intention of capturing and analysing the role of design and designer in such projects.

From the inception of the work, one thing was clear: while there was consensus that research and practise should intermingle, no one involved had a concrete idea of what the outcomes should, or even could, be. I had been forewarned that undertaking a PhD would throw many things into doubt as more questions than answers would arise as the process began; and in developing a methodology for working in a space that bridged between practise and research, this proved to be true. This paper explores the first year of work undertaken as part of the unpacking of process in embedded architectural research and the structuring of methodology which has become the driving force in the work as I begin to ascertain what it truly means to be an embedded researcher in/of architecture.

Research in practise

Of course, it is not uncommon for architects to engage in academic research and writing, with many of the most celebrated architects known not only for their built works, but their contributions to pedagogy.[2] And the phenomenon is nothing new—the publication of research on architecture, by architects, pre-dates even the modern conceptualisation of the profession. Two millennia ago, Roman architect Vitruvius composed his comprehensive treatises on architecture, *De Architectura*, codifying a myriad of architectural elements such as scale, proportion, material properties, and building typologies.[3] Arguably the pioneer of documenting architectural research (and possibly architectural mononymity), Vitruvius's work laid the foundation for such treatises on architecture, defining the *principles* of architecture.[4] As a testament to its enduring impact on the architectural pedagogy, if not the field of architecture, Vitruvius's works are still introduced in modern architectural schools as a foundation for the

teaching of architectural history. The architectural treatise as a form of architectural research would wholly comprise architectural theory well into the 18th Century, with architectural "greats" writing on discovery through production, defining stylistic and methodological underpinnings of the "correct" way to do architecture. There was little self-reflection in the writing, with architects from Otto Wagner to Corbusier instead offering declarations on the profession based on truths gleaned through practise.[5]

Architectural theory has developed substantially since the heyday of the architectural treatise, with Schoonderbeek attributing the rapid change in the role of research and writing in architecture to the explosive growth of the field of architecture.[6] It can then be argued that as the scope and complexity of projects continues to grow (as illustrated by the case study being undertaken), the role of research in practise can continue to expand as well. Illustrative of the growing role of research within architectural practise, many large firms have research arms which explore materials, innovative construction or production methods, technology, and design. These modes of research can be characterised as tracing elements used *in* practise.

A theme among much of the research generated in this vein is its ability to further the interests of a firm or specific project, or to bring acknowledgement to a firm. By executing research in-house, therefore generating intellectual property within the confines of the firm structure, a firm can differentiate itself through product or method. Yet notably absent from this self-reflexive work is analysis of how architecture is produced—arguably a less monetisable or differentiable element of architecture, yet one that could have fundamental impacts if applied to practise. The disconnect stands to reason as, with little exception, architecture firms operate as for-profit entities, and as a by-product of advancing knowledge, would also benefit from developing concepts which can be leveraged directly in the design process to attract clients or cut production costs.

Research of practise

As a foil to architectural research executed by architects within practise, the examination *of* practise, exploring the *process* of architectural generation, when undertaken, has notably been relegated to those outside of the architectural practise observing and interpreting the function in the architectural office. To look behind the curtain of architectural production, stripping away the conceptualisation of architecture's resultant as a building, is to try and rationalise an outwardly haphazard process. The inherent murkiness of the development of large-scale projects owes to the fact that hundreds of people, including scores of specialists external to architectural practise, typically are involved in the conceptualising, design, and documentation process. The characterisation of architectural production—especially in such complex cases—

as occurring in a black box is understandable, as it is impossible to fully document, rationalise, and understand the inputs which shape the architectural deliverables.[7]

The primary example of this ethnographic research is Albena Yaneva's two-year study of the Office of Metropolitan Architecture (OMA) as the studio designed the proposed, but never realised, extension to the Whitney Museum—billed as NEWhitney—in New York City.[8] The research is grounded in Actor-Network Theory (ANT), seeking to rationalise the architectural production process through the analysis of methods and actors—both human and non-human—that give rise to the realised architectural form. Leveraging her Latourian background, Yaneva makes the case that architecture is more holistically understood as a process by examining the production itself, rather than retroactively examining the built work and critically analysing it for clues as to what forces shaped the building.

Yaneva and Latour's work isn't without its critics. Resistance to the ANT approach to analysing architecture has stemmed from the overemphasis on process, while a standard conceptualisation of architecture is the final output: a building.[9] This argument is something that I too grappled with when first encountering Yaneva's writings. To conceptualise the practise of architecture not as the design and creation of a building, but instead as a series of reactive negotiations between varied factors, is to fulfil what Till describes as the profession's resistance to dependency on all the outside forces which shape the works of architectural practise.[10]

But Yaneva does make a compelling case that while the architectural process often leads to the construction of a building, the actual deliverables produced by architects are not buildings; a fact fully underscored by the reality that after two years of design, the OMA NEWhitney project was put on hold, ultimately to be cancelled. But it isn't right to say that the two years weren't architecture.[11] Rather, the design process resulted in architecture in the form of deliverables such as drawings, models, written reports, and other mechanism of expressing the design and intentions in a myriad of formats for consumption by parties with differing interests in the project. Therefore, the analysis of the production of these deliverables makes a compelling case for defining the mechanisms which shape architecture and architectural practise. Where Yaneva and Latour achieve success is in the realm of defining frames of analysis for understanding architectural process, rather than defining anything new about the profession. But in doing so, it is reasonable and fruitful to analyse architectural production to give a more comprehensive understanding of the heterogenous cacophony of inputs which shape architectural projects. Leveraging the foundational work of ANT as a mechanism for analysis of the architectural process allows for a compellingly comprehensive examination of

what actors influence the production of deliverables in the context of the project. Understanding architectural practise in the context of large-scale projects through *process* as opposed to the realised work is therefore a far more useful, insightful means of understanding practise within the context of city-shaping.[12]

A second form of research of practise, conducted by those who have a pedagogical (and in some cases, professional) background in architecture, is worth addressing as well. In the last decade, several PhDs have addressed issues related to the practise of architecture. In Australia, a selection of these have explored 1) gender in architectural practise,[13] 2) conceptualisation of professional identity,[14] 3) digital modelling as a tool of design,[15] and 4) the generation of architectural knowledge through design,[16] as examples. These studies, along with Yaneva's research, have positioned architecture as a unique profession, worthy of analysis based upon its functional structure. Together, these studies leverage anthropological methodologies, relying on "field work" (which could be referred to as "firm work", as it involves observing the activities of architecture firms), not unlike Alevesson's expansive research on knowledge-intensive firms (KIFs) and professional services firms.[17] This approach to analysing architecture eschews the tropes of architectural theory as generated by research in practise in favour of exploring the milieu—where and how architecture as *process* takes place.

From an anthropological perspective, the engagement of this "firm work"—in which a researcher visits a firm (or firms) to observe what happens and then interprets the information gathered—allows for architectural research to generate informed observations and develop theories based upon the function of the architectural profession. These visits, sometimes only a few days or weeks—though in the case of Yaneva, repeated, extended visits over the span of a few years—represent contact and observation of the "other". This observation, and subsequent analysis, reflects the anthropological origins of studying other cultures—again, playing into the conceptualisation of architecture as an insular profession with its own engrained culture, language, and customs, which are taught from one generation to the next.[18] In Yaneva's work, the profession of architecture is characterised in anthropological terms, as if observing a tribe.[19] The characterisation is reinforced by the pedagogical models profiled by Till, which he attributes to an insular, and at times out-of-touch, profession as it operates in idiosyncratic ways.[20] The characterisation of the act of production in architecture by Banham as occurring in a "black box" only further reinforces the disconnect between the profession and the outside world.[21] Of course, in this way architecture as a profession is ripe for anthropological study as the perception of architecture as driven by a distinctive culture—pedigreed through university—is rampant. And from the inside, seemingly not wholly inaccurate.

But, if architecture is a tribe, it is possible that the tribe's ways aren't fully understood by the external anthropologist, even if that anthropologist is trained in architecture. No matter how long they observe a process, they are always an observer. And in many instances in Yaneva's characterisation of OMA's work, there is a trend toward romanticising elements of architectural practise and production which can more accurately be rationalised as by-products of necessary architectural manoeuvres or elements "standard" to practise. Even through her participation in the "rituals" of design development (e.g., using the foam cutter to better understand how architects work), the disconnect of the action from the actual production in the office serves to sever the tangible link between action and resultant deliverable in the pursuit of design. Mimicry to gain understanding of process can only offer a superficial connection with the actual production which occurs—in the tribal analogy, the likeness would be akin to a researcher participating in a ritualistic dance by merely mimicking movement, rather than being immersed in its full cultural meaning.

Research in/of practise

What differentiates the present research, and what this paper seeks to outline, is the question of what it means to not only contribute to architectural practise—through research of practise—and observe and analyse architectural practise—through research in practise—but to do both simultaneously: research in/of practise. The research aims to go beyond an architecturally oriented narrative or evaluation of the goings on in an architecture firm, instead seeking to rationalise the external influences on and impacts of the design process. Further, the research seeks to contextualise the work executed by modern architectural practise within the larger project ambition of city-making. By framing the role of design and designer in contexts independent of the architectural process, this research is intended to be self-reflective of practise and practitioners, lending an understanding of what and how knowledge is generated through the design process.

While using the methods of researchers of practise, this research is differentiated in that neither Yaneva, nor the researchers who have an architectural background who conducted research about the firms in which they based their research, participated in the design process or office structures which they analysed. This step, to break the plane of observation and become an active participant in the project, opens new avenues of exploration; and new opportunities for concern.

Among the potential advantages afforded by the participant/observer role is a pre-existing familiarity with the processes of design which are undertaken in a large-scale project: the general sequencing, expected inputs from outside consultants, regulations which frame the

boundaries of the design project, and the anticipated deliverables—being the mechanisms of representation of the design in various forms. This familiarity of professional practise offers the participant/observer tools—among them understanding jargon used within the office, the ability to read drawings and leverage the computer-generated digital model (which is used to comprehensively document the design and as a deliverable itself), and the opportunity for integration with the project team (both internally and outside the confines of the architecture firm). Simply by being a part of the team and understanding the daily interaction, inputs, and production in the office, the researcher is able to better understand what questions should be asked through the research.[22]

Pragmatically, given the particularly protracted timeline of the design process of a complex infrastructural project (such as the project being researched as a "live case study") the structure of the embedded PhD affords the opportunity to leverage the project timeline more fully than a shorter period of research would allow. While not every element experienced/observed/engaged in will necessarily be integral to the research, the extended nature of the research structure through the hybridised model allows for the dedication of such long periods of time to the project. While Yaneva spent two years on her research at OMA, such extended time is understandably hard to dedicate to a singular project—especially where there may be weeks or months where information may be slow to materialise. The nature of the participant/observer role allows the researcher to be present through the various stages of the project without time being lost to potential non-productivity. Given the intimate exposure to the project workings day-to-day—indeed, much of the research is the work on the project, understood through the manipulations and production of deliverables in tandem with the project team—even minute details which may not be captured by a researcher observing from an arm's length may be seen, recorded, and later analysed by the embedded researcher. Similarly, prior knowledge of the architectural process allows for filtering of research items of interest versus incidental 'white noise' during the course of the work.

Conversely, it is imperative in this research to recognise the inherent bias in the work, which must be carefully managed through ethics and review by external parties. In addition to the bias generated by being part of the team and process, there are encumbrances of being 'indoctrinated' in the ways of the profession through entrenched ideas perpetuated by the pedagogical and social models which dominate architecture.[23] The risk of generating an 'us vs. them' mentality, assumptions that something is being done simply because that is how it has been or should be done, reinforced through work in the profession for nearly a decade, is ultimately a risk. Additionally, the role of participant/observer can be greatly complicated by the production realities of architectural practise; deadlines, meetings, and generation of

deliverables which are required as part of the 'participant' role. Of course, the daily tasks completed as part of the project offer a valuable tool as research items, as does participation in meetings and interaction with clients and consultants. However, the balancing of production responsibilities and project documentation, in addition to documentation of what is observed, requires a level of compartmentalisation and self-reflectivity to unpack the reasons behind the actions which are undertaken as part of the team.[24] In the push to produce, the role of observer can become obscured in favour of the participant, and this must be recognised and mitigated through subsequent retrospective analysis of outputs produced and interactions with others surrounding production in the participant role—down to words used to characterise it all. For example, in a meeting, where the researcher is both recording information in the role of participant, but also taking notes on what is occurring as an observer, not only what is said in the meeting is an input, but the researcher's thoughts and contributions (in the capacity of participant), are inputs, requiring separation and reflection by the researcher on himself and his actions in the meeting.

By recognising the potential merits and pitfalls of embedded research as a participant/observer and working to refine the method of data collection through the course of the research, the strengths of the role can be leveraged and concerns can be managed and mitigated through both self-reflection and discursive review of findings with both architectural and academic advisors and colleagues. Utilisation of ANT as a framing mechanism for the work, drawing in a wide array of both human and non-human actors for analysis, also helps by lending a broad context to the work and providing different scopes and scales of data to track and test. By using this broad base of information, tracing it through the project and production, and discussing it with those who use the information in order to understand the perception of those who both create the deliverables which reflect the design and subsequently utilise those deliverables, a compelling case can be made upon a solid base of research.

Methodology as a foundation for research in the modern firm

Ultimately, the establishment of a methodology for undertaking research on the role of design and designers, while working on design as a designer, is key to undertaking embedded research. While the questions to be explored as part of the embedded PhD aren't related to how to research architectural practise, this question must first be tackled to allow work to begin, and then must be continually refined as the work proceeds. By gathering and analysing inputs which drive a project, reflecting on the information gathered, and finally understanding those reflections to test within the context of the project and team, a rigour of data collection can be established by which to complete the research. Most of the architectural generation that goes on in the office is not necessarily about *design* in a traditionally understood sense (e.g. crafting

of a realised work), but instead production of mechanisms which represent the design for larger consumption and contribution to the feedback loop, driving a project forward. So too, the research can become a part of the feedback which informs a greater understanding of modern practise in the context of its contribution to large-scale urban infrastructure—and therefore, to our cities.

Interaction with the materials of production through embedded work on the project, contextualised through interviews and engagement with not just architectural practitioners, but other professionals and specialists who form a part of the larger project team, will provide data for research which would be difficult to synthesise without the broad understanding gleaned through the participant/observer format. The goal in the research of understanding the role of design and designer in large-scale urban infrastructure projects, will best be achieved through continued refinement of process. As more information is gathered, a clearer sense of what questions remain to be explored thanks to the direct interaction with project participants and the raw data of the daily production itself.

Ultimately, the aim of the research being undertaken is to better understand how architectural *knowledge*, represented through design outputs and leveraged in the realisation of projects, is produced within the context of practise. By understanding the process of architectural production in the case of large-scale infrastructure projects, questions of larger implications of design in the realisation of urban-scaled ambitions can be better answered. From this understanding of the web of knowledge which drives decision making in design, constantly in a state of flux, the research can have broader implications not merely within the context of transport, design, and the city, but for what modern architectural practise means for the generation of cities as large-scale infrastructure transforms the way we live.

Endnotes

[1] Sumati Ahuja, 'Professional Identity and Status: An Ethnography of Architects in Professional Service Firms', PhD diss., (University of Technology Sydney, 2018).
[2] A few examples include Rem Koolhaus's *Delirious New York*, Bjarke Ingels' *Hot to Cold*, etc.
[3] Kruft, Hanno-Walter, *A History of Architectural Theory from Vitruvius to the Present* (New York: Princeton Architectural Press, 1994).
[4] Marc Schoonderbeek, 'A Theory of "Design by Research"; Mapping Experimentation in Architecture and Architectural Design', *Ardeth,* 1 (2018), 63-79).
[5] Otto Wagner, *Modern architecture: a guidebook for his students to this field of art* (Santa Monica, Calif: Getty Center for the History of Art and the Humanities, 1988). And Le Corbusier, *Towards a new Architecture* (New York: Dover Publication, 1986).
[6] Schoonderbeek, 'A Theory of "Design by Research"'.
[7] Reyner Banham, 'A Black Box: The Secret Profession of Architecture', *New Statesman and Society* (1990), 22-25.
[8] Albena Yaneva, *The Making of a Building* (Bern: Peter Lang, 2009).
[9] Graham Harman, 'Buildings are not Processes: A Disagreement with Latour and Yaneva', *Ardeth*, 1 (2018), 113-122.
[10] Jeremy Till, *Architecture Depends* (Cambridge, MA: MIT Press, 2009).
[11] Yaneva, *The Making of a Building*.
[12] Albena Yaneva, *Mapping Controversies in Architecture* (Surrey, UK: Ashgate, 2013).
[13] Gillian Mary Matthewson, 'Dimensions of Gender: Careers in the Australian Architecture Profession', PhD diss., (The University of Queensland, 2015).
[14] Ahuja, 'Professional Identity and Status'.
[15] Sarah K. Benton, 'The architectural designer and their digital media: an investigation into the extent to which it is advantageous to include digital media as part of the designers' 'toolset' in the early stages of design', PhD diss., (RMIT, 2008)
[16] Louise Wright, 'Architectural Knowledge: the way architects know and use knowledge embedded in design', PhD diss., (RMIT, 2012).
[17] Mats Alevesson, 'De-Essentializing the Knowledge Intensive Firm: Reflections on Sceptical Going against the Mainstream', *Journal of Management Studies*, 48, 7 (2011).
[18] Till, *Architecture Depends*.
[19] Bruno Latour and Albena Yaneva, 'Give me a gun and I will make all buildings move: an ANT's view of architecture', *Ardeth,* 1 (2018), 12-20.
[20] Till, *Architecture Depends*.
[21] Banham, 'A Black Box'.
[22] Danny L. Jorgensen, Participant Observation: A Methodology for Human Studies (London: Sage Publications, 1989).
[23] Till, *Architecture Depends*.
[24] Jorgensen, *Participant Observation.*