Design Research
&
Reflective Practice

Lisa Grocott
Design Research & Reflective Practice:

THE FACILITY OF DESIGN-ORIENTED RESEARCH TO TRANSLATE PRACTITIONER INSIGHTS INTO NEW UNDERSTANDINGS OF DESIGN

Lisa Grocott

Doctor of Philosophy
School of Architecture and Design
College of Design and Social Context
RMIT University
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DECLARATION

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the exegesis is the result of the work which has been carried out since the official research program; and any editorial work, paid or unpaid carried out by a third party is acknowledged.

Lisa Grocott
September 7, 2010
Acknowledgements

I used to daydream of writing the acknowledgments page. It seemed a way of affirming that one-day this project might really be complete.

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Summary

This PhD research explores the potential of design-oriented research for investigating design practice. This project is interested in drawing attention to the value of a designer’s perspective, and showing how this perspective can play a more significant role in shaping how academic discourse frames and understands design. This goal is explored through the critical undertaking of a design-oriented research case study. In reflecting upon the methods adopted the project can evaluate, from a practitioner’s perspective, the limitations and the opportunities of designing as a research methodology. The visualisation case study includes academic and professionally framed design projects that examine directly and indirectly the potential and appropriateness of design-oriented research for disclosing productive insights into design praxis.

In advocating the relevance of practitioner-researchers contributing to the academic discourse surrounding design practice, the audience for this research is the studio-based educator. The disciplinary values of the research model would be relevant for educators with a design background who are interested in undertaking research that is motivated to both influence teaching strategies and contribute to our collective understanding of design practice.

This research operates at the nexus between Brad Haseman’s notion of performative research, Alain Findeli’s framework for project-grounded research and Donald Schön’s idea of the reflective practitioner, in turn casting the act of designing and reflecting as central to the project-orientation of the research. Exploring the methodological practice of a designer-researcher, this project is driven to adopt and adapt studio-based methods and reflection-based research interventions that will promote the synergetic relationship between speculation and reflection. In noticing and accounting for the designer’s reflective conversation with the research situation, the project proposes strategies for how what I am calling the back talk of a reflective design practice might be productively amplified to establish resonance and facilitate the external consultation of practitioner-led research.
This research study explores the potential of a design-oriented approach to research. The framework for this reflection-based approach can be characterised as multi-modal, iterative and engaging with multiple methods. The following dissertation is designed to structurally embody the nature of the research approach. This translates to a dissertation with an interwoven narrative and reflections layered on reflections. The three key elements of the study that shape this documentation are blog entries, case study projects, dissertation diagrams and writing.

The projects of the visualisation case study fall into two categories: the primary design projects including visual essays and visualisation studies and the secondary references including images that document the broader research and design activity. The primary projects are introduced and documented in full in chapter two, with the secondary illustrations inserted throughout the dissertation as snapshots of my broader research activities. The snapshots might include, for example, a single proposition diagram that provoked debate, a frame from a research presentation or a detail from a grounded theory exercise. This research program is described as project-grounded and these tangible project details are included to render a holistic understanding of the research/practice experience. The research website (on the DVD) includes extended commentary on the visual essays, the visualisation studies and full examples of some PhD and professional practice presentations.

The research blog provided a structure for the reflexive writing that runs through this PhD program. These conversations with myself were critical to the design-oriented approach of this study, since the blog operated as the equivalent of a writing sketchpad. The tentative writings allowed perspectives to be in flux and newfound understandings to surface. More than simply a medium for thinking-through-writing, the blog provided a unified space for negotiating the back talk within and between the research and professional practice spaces of the research program. In this interconnected space, the blog became a place of active reflection on my study from multiple perspectives – including the experiential knowing of the practice experience, the meta-conversation of the research program, and the relevance of a theorist’s conceptual framework with respect to my understandings of praxis. Sample blog entries are included throughout the dissertation and the full blog is on the research website. The reflective accounts that introduce chapter sections are selected blog entries that have
been revisited. These short entries weave together a composite narrative that seeks to candidly highlight how I used these internal conversations to negotiate reflections of the research experience.

The projects extend beyond the dissertation text to full-page diagrams that introduce major sections of the research. The diagrams and the dissertation text were developed simultaneously, informing one another through various iterations. The diagrams and text (along with the reflective accounts) provide multiple entry points to the dissertation as well as potentially appealing to different literacies and levels of engagement. Designing the dissertation diagrams did not begin as a speculative process and yet the act of translating the dissertation argument into visual form served to raise possibilities while simultaneously challenging some assumptions. The objective behind the diagrams was distinct from the visualisations of the case study as they intended to fix the argument in visual form. Yet the recursive conversation between the diagrams and text once again underscored the discursive value of an ambiguous text. The short captions go some way toward framing a reading of the diagrams and yet, just as the proposition diagrams of the case study are positioned for open interpretation rather than ‘deciphering’ by the reader, there is intentionally no legend or comprehensive caption. These diagrams and the reflective accounts were also the primary artefacts of the PhD exhibition.

The full complement of research artefacts may have been side-lined to the website, but the design of the dissertation is conceived to reflect a non-linear research process, reminding the reader that designing, writing and framing exercises were undertaken iteratively throughout the PhD. The website makes multiple entry points explicit by allowing the reader to scan the reflective accounts or study the dissertation diagrams while reading the full text. I believe that together these elements present the evidence of a critically reflexive approach to researching design praxis by way of interrogating my own situated practice.
CHAPTER ONE—
The Context
I was watching them debate their point. Although I didn’t know most of the people they were mentioning I knew something of what they were talking about. They may both have been design theorists, but I was the designer in the room. The philosopher was arguing that the act of designing was inherently reflective; the painter-turned-theorist was counter-arguing that designing was all about looking forward. It was an argument they had had before.

I wanted to jump in; I wanted to tell them that they were both right. Yet I stood on the sidelines and remained silent. They threw quotes from other men at each other from books I hadn’t read, books I didn’t want to read. Still, I also didn’t want to be shut out of the conversation. I wanted to join in. I held on to the idea that my images alone should be enough. Yet I wanted to give a practitioner’s perspective. I just didn’t have the words.
CHAPTER ONE—
The Context

This research investigates the potential of a design-oriented approach to researching design practice. This dissertation structures the thesis into four chapters: a critical framing of the research project; documentation of the design-oriented research case study; a reflective account of how the case study was undertaken; and an evaluation of the potential of design-oriented research.

This introductory chapter lays out the broader context and the critical framework on which this research project is founded. The first section outlines the ambitions of the project by identifying the relevance of the practitioner-educator contributing to the theoretical framing of design praxis. Situating the project in relation to design research discourse, the next section discusses the paradox of ‘design research’, a field of scholarship that often does not appear to embrace the designer. The latter sections orient the reader by providing snapshots of parts of the project, including the components of the case study, the basic research strategies adopted and the overall structure of the research program. In theoretically situating and conceptually framing the methodological elements within the study, this dissertation addresses how and why the study is motivated to both model and advocate for a design-oriented approach to researching practice.

Throughout this dissertation, when I reference the research project, I am talking of the subject and content of the overall research. References to the research program are related to the methodological orientation of the research, specifically how the research was structured and undertaken. Design projects refers to the studio-based artefacts that are the central component of the visualisation case study.

1.1 Situating the Project

THE RATIONALE FOR THIS RESEARCH

At the outset the broad motivation underpinning this research was for designers to have a more explicit understanding of the potential of design practice beyond the style and utility of the artefact. I was less interested in what designers crafted and how objects functioned, and more driven to consider how designers acted in the process of making. This orientation is in part personal since I have always been more interested in the process of
designing than the crafting of the material object, but it was also framed by the societal and professional forces that are shaping the future of design education.

Observing what drives the conversations at my institution and the agenda of design conferences internationally it is clear that there are significant changes facing the design profession. It is also apparent that the design academy recognises that these forces will necessarily inform future models for design education. The impact of these technological, social and economic changes will require designers to not just generate material objects but to also design systems, services and experiences (Davis 2008). Indirectly the rationale behind this research is framed by the conversations that circle around the development of research cultures in design and the need for designers’ to make themselves more attractive to interdisciplinary collaborators (AIGA/NCSU 2010).

I believe this period of change represents a time when new practice opportunities can emerge for designers, but this will in part depend on the design academy’s ability to prepare graduates who can communicate to employers, clients, stakeholders and potential collaborators what expertise they, as designers, bring to the particular situation. The practice of research presents a multitude of potential projects and different research methodologies for addressing the issues facing design education. However, the design-orientation of this research seeks to develop a methodological approach that respects the expertise of the practitioner. With this in mind this project is specifically interested in practitioner-led models for researching practice that subsequently offer the studio-educator a more-than-tacit understanding of his or her practice.

This research is framed by the broad idea that a useful step designers can take in navigating the paradigm shift away from objects to experiences is to become more adept at accounting for design expertise. The assumption is that if design practice is going to operate within an increasingly dematerialised realm then the practitioner-educator would benefit from building on his or her already sophisticated lexicon for presenting and critiquing the material world of design objects. These changes in design education are going to require not just the introduction of new skill sets but also a new way of talking about what designers do. Therefore it would be valuable if the designer were able to consciously use and explicitly teach the more cognitive attributes of design that practitioners draw on every day, yet that are often only implicitly embedded in design curricula. The issue of the transferability of design attributes from one design field to another is just one example that highlights the value of educators – and subsequently design graduates – being more comfortable with explicating the tacit knowing they bring to their teaching, research or professional practice.
Essentially I am interested in designers being better able to articulate not just what they make and why it is useful, but also the thinking involved in making and what this way of thinking has to offer.

AN INTRODUCTION TO THE RESEARCH DESIGN

There are two communities of scholars researching the field of design praxis that this project intersects. Young and Spencer argue there is a general consensus that design methodology can be characterised by two different paradigms: “rational problem solving” and “constructionism” (2009, p155). The epistemological and theoretical perspectives that distinguish these fundamentally different ways of understanding design have also led to a breadth of scholarship that further enacts different research approaches and methodologies. Nigel Cross, Kees Dorst and Brian Lawson are three of the primary researchers in the community of technical rationalists who investigate this terrain of design knowing by working with a deductive, experimental methodology that allows the designer’s decision-making practice to be observed and analysed. In contrast, scholars such as Clive Dilnot, Tony Fry and Wolfgang Jonas theorise the praxis of design in conversation with philosophical texts and interpretations of artefacts/services.

This research project shares an interest in research subject with these scholars – the desire to contribute to the theoretical framing of design praxis. However, my epistemological and theoretical perspective is distinctly different from the position of the techno-rationalist social scientist, and my methodological approach and research tactics and strategies are intentionally dissimilar to that of the humanities scholar. This research project is interested in how approaching this subject from another theoretical perspective may either substantiate or triangulate theories that have emerged from these related fields.

This practice-led research project investigates design knowing and praxis by adopting a reflective practice approach to my professional and research practice. Young and Spencer provide an operational definition for reflective practice in this research context (2009, p2):

*The reflective practice method for practice-led design research refers to the paradigm as reflective practice and the action-orientated theory of reflective inquiry (Schön, 1983 and 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.*
My research adopts a self-directed and open-ended heuristic approach to this field. In this research program the reflective practice orientation has three inter-related methodological components that have been appropriated for a design-led context: the case study, the discipline of noticing and narrative enquiry. The central importance of the design project underscores the relevance of the situated design case study. The discipline of noticing reconfigures the cyclical approach and intention to effect change-of-action research and the emergent and disciplined observations of grounded theory, offering tactics for reflective conversation with the design projects and the research practice. Narrative enquiry complements the design orientation by providing a strategy for pulling far enough back from the situated context to observe the self-as-other. In creating a hybrid reflective practice that triangulates insights from across and between these various methodological approaches I hoped to compensate for some of the limitations of reflective practice while maintaining the integrity of offering a practitioner's perspective on designing. The research design is described in detail later in this chapter.

AN INTRODUCTION TO THE RESEARCH CONTEXT

The audience for this research is the studio-based educator who seeks to participate in the scholarship and discourse that will move us toward a richer understanding of design and subsequently reveal new ways of articulating the relevance of a design education. This research project puts forth a framework for practitioner-led research so that the design educator can offer a practice-driven perspective to researching design praxis. The decision to focus on research undertaken by the design educator, as opposed to research within a professional practice environment, is in part due to the impact that education can have on preparing future designers, and also due to the responsibility of the academy to support the advancement of practice through critical enquiry. If the academy drives most research into design, then this project seeks to put forward approaches to researching praxis that will resonate with practitioner-educators. By engaging in a critical research practice, the studio-based educator would be rewarded with the visual and linguistic tools to contribute to our understanding of design: through exhibition, publication, presentations and leadership roles within institutions.

From my position as an academic administrator and researcher I am interested in enhancing the designer-educator's capacity to make explicit how the designer thinks and acts when designing. From my position as a studio-based design educator I am motivated to engage other academic
practitioners to undertake and debate the contribution of practitioner-led research. Tracing a connection between these two motivations I have become particularly interested in considering the role research can play in how practitioner-researchers might come to know and articulate the usefulness and relevance of design in new, unfamiliar contexts. Ultimately the research program represents my interest in learning more about what designers know so that the practitioner-researcher working within the design academy can contribute to the immediate conversations within his or her institution and the scholarship that serves to define the domain of design. Within the visualisation case study this interest is made manifest through the visual essays that critically explore the tacit knowing of my design practice. Within the overall research project this interest is realised through the broader exploration of the potential of practitioner-led research. This leads to the broad research question: how might a speculative, reflective practice approach to design-led research contribute to the scholarship that seeks to understand design praxis? Section 1.3 outlines the specific research questions that the project investigates through the practice of communication design.

As the academy negotiates how to develop learning experiences for this new landscape, much academic discourse has required a move from focusing on the professional education of specific design guilds to more closely attending to the general purchase and relevance of design. This discourse may, for example, assert the relevance of design thinking for addressing complex humanitarian problems, or considering core design literacies for non-design majors. This is why I am choosing to focus on the general domain of design. I believe the practitioner to already play a distinct role in defining the specific procedural, material and technological knowing of his or her chosen field of professional practice (in my case, communication design). I am specifically interested here in how the practitioner's voice might influence the conversations within the academy that seek to better understand design thinking and design expertise in general. This more abstract interest in design discourse may once have been associated with the scholarly domain of the social scientist, yet in rethinking design education there is value in the academy grounding this discourse by framing the relevance of a designer's cognitive expertise within these new practice spaces. The design theorist may have the conceptual frameworks for this work, but the practitioner has the situated experience and the designerly knowing to explore the potential of these new contexts. For these reasons I believe the practitioner-educator can and should play an active role in critically framing our forever-evolving perspectives on design.

Working with my specific skills as a communication designer, this project explores visualising as a design-led research method. A sub-field of
design, communication design is concerned with the message, media and strategies for engaging an audience. Whereas communication design is a term that references a wide range of practices that can draw on multiple senses and technologies, this PhD limits its exploration to the practice of visual design. Specifically, the study focuses on two-dimensional graphic design of visualisations that are conceived to evoke discussion for a peer community of design practitioner scholars. Over the course of the project, additional reflection-based research activities have been introduced to address the limitations of designing as a form of enquiry. Together, the studio-based strategies and the reflection-based activities propose an approach for moving toward understanding of design. Within the framework of this research project I have come to name this reflective, yet design-driven, approach ‘design-oriented research’.

As a communication designer I understand this research to be about visualisations and their potential for investigating and communicating design knowing. As a design administrator/educator I perceive the research project to be about the potential of design-oriented research to make a contribution to academic discourse about design praxis. The first orientation appeals since it is clearly grounded in practice and embraces practitioner-led research. Yet, I also appreciate that the second orientation directly addresses my interest in practitioners playing a more active role in researching the general domain of design, as opposed to the specific field of design their practice engages them in. There were many times I wished I could confirm which of these orientations was more important. Ultimately I have come to realise the value of a research project that operates on two levels.

The first level comprises the design-oriented research case study that is at the heart of the PhD. The case study represents the site of exploration where, as a practitioner-researcher, I investigated the capacity of using communication design to advance my personal understanding and potentially our collective understandings of design. At this level the research uses different practice spaces to explore the tacit knowing of design and the potential of design in unfamiliar contexts. Over time it became evident that, although the case study might stand alone as a contribution to the field of communication design, if I wanted to more generally examine the potential of practitioner research then another tier of reflection was required.

This led to a second level of reflective engagement with the PhD, as I now saw the need for reflecting on not just the studio experience of the case study, but also on the limitations and possibilities that practitioner-led research presents. This level of enquiry frames the design work and methodological approach of the case study as the primary ‘project’ of the PhD. In this way the research seeks to reflect upon my research practice:
how ideas are generated by the process of designing, debated through critiques and presentations, and then written up as research outcomes. The chapters of this dissertation represent the additional level of analysis and abstraction necessary to evaluate the potential of design-oriented research beyond the specifics of the particular case study.

This explains how the research project has come to specifically explore the reflective capacity of design-oriented research for interrogating a designer’s practice and sharing a designer’s knowing.

1.1.2 Situating the Discourse

This is a PhD by project, which presupposes that the PhD operates within a context that already acknowledges and supports a project orientation to design research. But, given that the research topic explicitly explores the potential of practitioner research for informing research into design, it is important that the project is situated within the discourse that articulates the merit of performative research (Haseman, 2006), underscores the importance of design research being project-grounded (Findeli, 1999) and explicates why the act of designing and reflecting is central to the project-orientation of the research (Schön, 1983).

A short text published in the early ‘90s identifies three categories of art and design research: research “into”, “through” and “for” art and design (Frayling 1993). Christopher Frayling’s notion that research could exist through creative practice laid claim to the legitimacy of designing as a research method, while generating further debate about what this might really mean (a debate I return to in chapter 2.1.1). This research project initially privileged the research being practice-led above anything else, in the belief that new opportunities for practice would emerge from researchers sharing the exploration of their practice with their peers (van Schaik 2003). Grounded by an individual’s situated, professional practice this emphasis on the mastery of the practitioner-researcher firmly privileges advancing critical practice. What is less established is how a practitioner’s reflections on practice transfer and contribute to the academic community’s interest in constructing theories of design praxis. Given the ambition of this project to promote practitioner research that helps to build the academic
This diagram underscores how ‘practice’ is both the primary method and the object of study in this research program. The design-oriented research approach identified in this project operates within a performative research paradigm, while appropriating reflection-oriented methods from qualitative research. The designing, writing and framing activities of the research program are situated at an intersection between research through and about design.
discourse surrounding design, the project operates at the interstitial space between Frayling’s research through and into design.

Writing almost two decades after Frayling, Daniel Fallman examines Frayling’s theory closer and distinguishes between deploying research to make more successful design objects/experience and deploying design to research a topic (2005). Fallman makes the distinction that although both approaches may use design as a method, the first may have no intention of being knowledge-productive (what Fallman calls “research-oriented design”), whereas the second approach is motivated to disclose new knowledge about a field yet may not result in a designed outcome (“design-oriented research”). This research project adopts Fallman’s definition of design-oriented research, since it emphasises the declared intention to contribute to the knowledge of the field and share the outcomes of the research.

One of the challenges facing design-oriented research is that the work is often evaluated against the methods, value systems and research criteria of the sciences or humanities. Countering the binary framework presented by qualitative and quantitative research, Brad Haseman proposes the need for a third paradigm that is sympathetic to the values and methods of practice-led researchers (2006). Haseman recognises that qualitative and performative research both offer multiple methods for researching, yet he makes the distinction that the precondition for performative research is that the methods be led by practice. Haseman argues that “some researchers have become impatient with the methodological restrictions of qualitative research…[leading to] a radical push to not only place practice within the research process, but to lead research through practice” (p3). This research project sympathises with Haseman’s characterisation of performative research to the extent that he accounts for how the research is initiated. Haseman describes how:

...many practice-led researchers do not commence a research project with a sense of ‘a problem’ Indeed they may be led by what is best described as ‘an enthusiasm of practice’: something which is exciting, something which may be unruly, or indeed something which may be just becoming possible as new technology or networks allow (but of which they cannot be certain). (Haseman 2006, p3)

This position is further supported by the idea that practice-led researchers need to be confident that “their designing activities reside within a theoretical framework that allows the methodology and research question(s) to be held in suspension” (Young and Spencer 2009, p2).

I was initially drawn to the practice-led argument that the research should also be disseminated “through the symbolic language and forms of their practice” (p4). Haseman describes the practice-led researcher as hav-
ing “little interest in trying to translate the findings and understandings of practice into numbers (quantitative) and words (qualitative) preferred by traditional research paradigms” (p4). This disinterest might hold if you want to share your research with other practitioners in your field, but for this research project the research outcomes needed to be translated to the broader community of design scholars. The project seeks to overcome the “collective muteness of the profession” by resisting the “binarism between action and contemplation” (Bonsiepe 1999, p154).

Findeli proposes a model that helps to “build a genuine theory of design by adopting an epistemological posture more consonant with what is specific to design: the project...[The] epistemological figure is that of embedded, implicated, engaged, situated theory” (1999, p108). The methodological approach of this research project can be equated to Findeli’s model of “project-grounded research.” Findeli characterises this approach (used within a doctoral program) as a “kind of hybrid between action research and grounded theory research...that reaches beyond those methods, in the sense that our researchers in design are valued both for their academic and professional expertise” (1999, p111). In this way, the research is grounded by the projects and the theory emerges from the applied project experience.

Given the goals of the PhD my research project does not liberally accept Haseman’s call to resist the constraints of translating practice into words, nor does it assume Findeli’s emphasis on constructing the research problem and questions up front. The action-oriented methodological approach of the project allows the practitioner to adopt methods that are unique to design, while promoting Haseman’s respect for diving in and following hunches and Findeli’s caution to avoid confusing the importance of the research project with the project becoming “the central purpose of the research project” (p 111).

Consequently, in adopting Fallman’s term – design-oriented research – this research project asserts a commitment to research outcomes that transcend the practice experience to offer new ways of seeing and understanding design. This ambition does not diminish my allegiance to practice-led research but does challenge my base assumptions since it leads me to recognise the methodological contribution of other disciplines. This manifests in the project through an examination of the potential of complementary research activities that might be adapted to draw on a designer’s expertise while also introducing new discursive strategies to the research program.

Having said this, I want to clarify that my commitment to making a contribution beyond the situated projects that were undertaken does not simply equate to a desire to produce only propositional knowledge. Respecting that practice-led art and design research are often characterised as generating experiential knowing, this research project acknowledges the
often tacit and sometimes ineffable type of knowing that comes from a designer’s experience of creating work. This research project respects that when it comes to the application of a practitioner’s knowing and future research, then tacit knowing is just as important as the knowing that can be explicitly communicated (Niedderer 2007, p12). In parallel, the reflective writing of this dissertation explains the discursive contribution of the anecdote when it comes to theorising my everyday experience as a designer researching my own practice (Gallop 2002).

REFLECTIVE PRACTICE DISCOURSE

As much as this research project is an investigation into design research, it is also an exploration of reflective practice. Donald Schön is the scholar who has most directly influenced this research, in part due to his interest in framing the practice of design through the lens of reflective practice (1987). Schön uses the term ‘designing’ in two senses: specifically, such as when observing the teaching and learning of the practice of designing within architecture; and more broadly, to account for the reflective conversation that is at the core of all forms of practice, whether that be teaching, counselling or nursing (1992). Similarly, he folds the idea of reflective practice into Dewey’s notion of ‘inquiry’, a practice seeking to “integrate thought and action, theory and practice, the academy and the everyday world” (1992, p123). In this way he describes how the practitioner-as-researcher might understand his or her role as “inquiry-enhancing” (p123).

The core concepts introduced by Schön that are relevant to this research project are touched on in this quote:

*Through the unintended effects of action, the situation talks back. The practitioner, reflecting on this back talk, may find new meanings in the situation which lead him to a new reframing.* (Schön 1983, p135)

First, I am interested in the idea that the designer is in conversation with the physical components with which he or she is designing: what Schön calls the reflective conversation with the *materials* of a situation. Second, I am interested in the broader idea that the designer is in reflective conversation with the *situation*, which opens up the idea that the designer is not just reflecting upon material, technical and physical decisions but also a broad range of social, environmental, cultural and conceptual concerns. Schön describes this reflective conversation as ‘back talk’; naming the often internalised and rarely verbalised series of hunches and responses, questions and decisions, that a designer mentally weighs up when making or contemplating a move. In attending to the resistances and opportunities
the back talk discloses, the designer begins to assess the potential of different propositions. This ongoing evaluation of the situation from different perspectives introduces Schön's notion of framing (1983). The capacity to frame problems or situations in unforeseen ways is how Schön characterises the designer's expertise in imagining innovative solutions. In this research, these three key concepts play a significant role: the reflective conversation with the situation; the back talk of design practice; and the capacity to frame and reframe a situation so that it can be evaluated from multiple perspectives.

Also relevant to this research are the different modes of reflective practice that Schön identifies. This dissertation most directly references his framing of reflection-in-action as the kind of thinking a designer does on his or her feet. Although this process happens in the flow of practice, the reflection is still complex given that the practitioner is allowing him- or herself to experience “surprise, puzzlement, or confusion in a situation which he finds uncertain or unique” (Schön 1983, p68). An important capacity of reflection-in-action is that it liberates the practitioner from working in a fixed procedural way, instead allowing him or her to reflect upon and respond to the specific conditions and potential of each situation. Reflection-on-action is the term Schön uses for the reflection that happens post an encounter. This can be characterised as a more consciously explicit act that requires practitioners to take the time to explore how and why they acted as they did. For designers wanting to identify their strengths and weaknesses, this tier of reflection allows them to establish an informed understanding of their own ideas, expertise and, ultimately, their practice.

In addition to Schön, my research draws on scholarship by John Mason in relation to the core idea of researching your own practice. I am specifically interested in Mason's confidence that his “discipline of noticing” methodology could embrace subjectivity and uncertainty. He counters that the approach “provides a self-consistent way of working through which the practitioner can take responsibility for remaining in question rather than committing themselves to a single interpretation (2002, p202).” Although Mason is writing specifically about teachers researching their practice, his emphasis on the importance of the researcher having the flexibility to act immediately in response to new insights and the weight he places on accounting for how insights might resonate with others make for an approach that also suits that of the design practitioner.

In relation to design practice, my understanding of Schön’s work is further framed by the writings of Bryan Lawson (2004 and 2006) and Nigel Cross (2008). Of specific relevance is the way that Cross articulates the notion of “co-evolution” of the problem and solution. Related to Schön’s idea that the reflective conversation can lead to a reframing of the situation, the
notion of co-evolution highlights the designer’s capacity to make a move into a situation as a strategy for understanding what he or she is dealing with. Distinct from a field where the first move may be to audit and assess, this ability allows a designer to be in a reflective conversation with the situation by proposing into an unfamiliar space. Recognising that it can be difficult to extricate the problem from the solution, Lawson and Kees Dorst (2009) use the term “design situation” as a way to acknowledge the total set of complex conditions and elements with which the designer is interacting. The capacity to make both a speculative and reflective move simultaneously is a central concept for this project.

This project takes a performative, design-oriented approach to researching practitioner research. Curious about the ways that designing can stimulate learning (Downton 2003, Schön 1992) and contribute to meta-conversations about the domain of design, the visualisation case study provides a platform for exploring the provocative and discursive role that design might offer as a research method. By undertaking research through and into design, this project considers whether the practitioner-researcher’s unique perspective might present new ways of investigating and communicating the tacit and experiential knowing of design praxis. The reflective conversation that runs through my research program allows the local research experience of the visualisation case study to iteratively inform the more expansive conversation about design and design research. The new understandings that emerge from the research case study directly inform the conclusions of this research. Both the case study and the overall project conclude that if the designer-researcher is drawn into a prolonged engagement with negotiating the subject of his or her enquiry (be it a visual essay, visualisation study or the research program itself) time and space is created for deeper critical reflection and productive speculation.
The cognitive psychologist before me was describing one of his protocol studies and the woman before that was educating the conference audience on how to do a literature review for a PhD. I was watching the crowded room of largely practitioner-educators, wondering what they were making of these design research presentations. Usually in the US context I feel like the token practitioner-researcher, the one the audience can relate to but also the one who confounds their idea of what design research is. As a designer I just wanted to stand there and model practitioner research. Someone else could take on the role of offering a framework for design research. Yet, as an educator I felt compelled (or was that obliged?) to at the least introduce a critical framework for helping other educators to understand that they didn’t need to put on a lab coat or read two hundred books before they could call themselves a researcher.

Today I wasn’t just going to present my studio-based work. I had some diagrams. The plan had been to simply map different kinds of design research in relation to Frayling and Fallman’s texts – to help other practitioner-educators understand what their options were. I was hoping the audience could learn from the diagrams as much as I learned from designing them.
Research & Designing
Daniel Pallman

DESIGN ORIENTED RESEARCH
Research in the Domain
Design is characterized by the Process
Deploy Design to disclose new Knowledge

RESEARCH ORIENTED DESIGN
Design in the Domain
Design is characterized by the Artifact
Deploy Research to develop enhanced Attributes

RESEARCH THROUGH DESIGNING
1.2 Examining the Role of the Practitioner-researcher

Design is a comparably young discipline with respect to the academy and engaging with research. Yet with design programs becoming increasingly more familiar within research universities, (at least in Australia and the United Kingdom if not consistently in the United States), the practice has been the subject of scholarship that builds on the longer-standing traditions of art history, cultural theory, and fields within the social sciences. From Heideggerian scholars to cognitive psychologists, this interdisciplinary approach has presented rich historical and socio-cultural analysis of designed artefacts by visual studies researchers in addition to empirical and philosophical accounts for the way design operates in the world. As valuable as this research will continue to be, it seems relevant as a practitioner-researcher to consider the potential for research into design that draws on the performative methods of creative practice and not just the qualitative and quantitative methods of the humanities and social sciences.

Fig. 2 (p25)

1.2.1 The Debate Surrounding Research through Design

For decades, design scholars have argued that design has its own distinctive approaches and expertise (Cross 1982, Jones 1992). Since the potential of research through design was first proposed in 1993, scholars have repeatedly revisited and refined Christopher Frayling’s initial categories (Findeli 1998, Jonas 2007). In parallel, examples of research through design have emerged, most prominently in the introduction of design PhD programs at Royal College of Art and the Illinois Institute of Technology during the late ’80s, and more recently in the trend of peer-reviewed exhibitions appearing at events such as the Design Research Society conferences. Yet even though this idea of research through, or by, design has become increasingly accepted, it would seem that potential research practices remain far from settled and are still perceived as contest territory, particularly when considering that ideas of how to educate researchers and develop practice-led PhD programs are still in development (Morrison and Sevaldson 2010, Scrivener 2004). As an example, for some researchers, including Ken Friedman, the idea of
This diagram frames the ‘design-oriented research’ perspective of the project, emphasising research that works with design to advance our understanding of practice. Operating at the nexus between practice-led research and practice-based methods, the study underscores the primacy of the acts of designing and reflection. In privileging reflection over observation, the practice-based methods draw more from the humanities than social science methods.
research through design is still deeply flawed (2003). Friedman sees design research led by reflective practice as a dead end and grounded theory as insufficient if we hope to build robust theories of design. His criticism rests with the emphasis on practice over theory and the subsequent understanding that the tacit knowing of practice cannot be explicitly articulated.

However, the institutional context of this PhD by project allows me to assume that the research will not be measured against the rigour of other disciplines. In this way the project can embrace Wolfgang Jonas’s (2007) position that the field needs to commit to the performative orientation of research through design and Findeli’s (1999) argument that the studio project is essential if the goal is to build design knowledge. In doing so I can make a virtue of the situated knowing and opportunistic methods of design practice. However, my guess is that Jonas and Findeli are not proponents of the practitioner simply investigating the character of his or her own mastery. The challenge, articulated for this PhD project, is to explore the appropriate kind of critical framework that would allow the reflection to transcend the nature of everyday practice. Consistent with the goals of this research project the methodological commitment needs to be oriented by its intention to make a critical contribution to the understanding of how designers think and act. In adopting a ‘design-oriented research’ approach I am underscoring the point that the research seeks to do more than advance and share my own mastery of the field of visual communication.

This project recognises that the idea of design-oriented research is not in itself novel, as there are whole communities of practitioners working on project-based research across and through a variety of sub-fields of design. These researchers may be advancing the practice of their field – through architecture, communication design or fashion, for example – or alternatively they may be applying design thinking to complex interdisciplinary projects. The distinction within this project is that I am seeking to bring a practitioner’s first-hand perspective to the theoretical discourse that investigates design praxis. The design projects within this PhD generally explore design knowing, practice and thinking, while the meta-enquiry of the PhD more specifically explores the perspective a practitioner offers to the scholarship of design research.

Findeli asserts the importance of practitioners engaging in this kind of enquiry.

*Then it is advisable not to leave the inquiry into the relationship of knowledge to action (or theory to practice) in the hands of theoretical disciplines...any longer. This inquiry, with all its social and ethical import, has to be appropriated by the practitioners themselves in a gesture of sovereignty and responsibility (1999, p112).*
A corresponding argument for contributing to the scholarship of design research by first undertaking design-led research is also found in the call for less-talk-more-action (Seago and Dunne 1999) and the observation that the abstract philosophical debates about design research may to some extent be resolved by simply doing more practice-led research (Scrivener 2004).

Susan Roth identifies three tiers of enquiry, arguing that much academic and professional practice research concentrates on the “concrete/specific” issues of the first level, while acknowledging the productive potential of advanced research into the “conceptual” and “theoretical/philosophical” enquiry of the next two levels (1999). My design-oriented approach to research seeks to model how practitioner research need not be marginalised to contribute only specific or conceptual outcomes to a project-based case study. My ambition was to examine the visualisation research case study in a way that would explore the potential of design-oriented research to disclose both practice-led, yet philosophical, insights about design praxis and thinking. Deploying studio-based methods as well as turning to strategies outside design, the practitioner-researcher is introduced to a toolkit of research methods. This serves to enhance his or her capacity to critically reflect on the insights generated by studio practice. The goal is not for the practitioner-researcher to become a philosopher or a psychologist, but for the designer to be sufficiently “self-conscious, rational and reflective” (Scrivener) to the extent that his or her insights into praxis can play a formative role in building theories of design. Consistent with the aims of the research, the project aspires to work with the unique nature of design practice by respecting Terry Rosenberg’s call to harness the poetic potential of design knowing (2007), leaving it to other disciplines to construct theories that are supported by and in turn inform design educators’ collective understandings of design.

THE PARADOX OF DESIGN RESEARCH

It is worth acknowledging the paradox of so-called ‘design research’. This field of activity is oddly named, since it often downplays the value of design or the designer. Lawson acknowledges the continued adoption of Cross’s phrase “designerly ways of knowing” as general recognition for the unique nature of design (2004), yet the majority of the research that seeks to define what makes design distinctive has often been undertaken by sociologists, philosophers, historians and cognitive psychologists (to name a few fields); not many of these researchers see themselves foremost as designers.

Conventional approaches to research can seem at odds with how designers might intuitively approach a project. As an example, even the act of beginning by writing the project’s aim and rationale and undertaking a liter-
ary search can run counter to the designer’s impulse to begin by proposing ideas into a situation rather than standing back to assess the situation first. Yet, even as some researchers have argued that designers have a disciplinary responsibility to account for how they think and act in the world (Burdick 2009, Cross 2007), support for adopting designerly approaches to research does not often translate to the mechanics of peer review. The research work presented and published still tends to fall short of embracing the opportunistic, rhizomatic, speculative, discursive and open-ended nature of design practice. A case in point: the editorial of *Design Research Now* acknowledges the dominance of essays on design research over project-based research, citing that “current projects often (still) do not satisfy the quality standards proposed by the pioneers of design research” (Michel 2007, p17). Similarly, the editorial standards and peer review process within established vehicles for disseminating design research, such as the journal *Design Studies* and the *Research into Practice* conference, by their names alone, show how they privilege research into design over design-led approaches.

This creates a situation in which designers are encouraged to accept that the scholar can take responsibility for articulating and framing how we talk about design, in turn allowing the designer’s own practice to go largely unexamined. For although reflection is an integral part of designing, multiple factors work against the practitioner being predisposed to stop and examine how he or she thinks and acts across a body of work. So although there is a wealth of literature that proposes ways to account for the design process and the distinctive qualities of designing, the texts read as largely a conversation between scholars (Jones 1970, Simon 1982, Archer 1995, Lawson 1997, Dilnot 1999, Cross 2001). It is not surprising that this literature has limited impact on studio teaching in the academy. Even with increased publications of design research, the offerings are scant in comparison to the dissemination of best practices through coffee table design books (Poggenpohl 2004, Lawson 2004). Studio educators may work in an academic environment yet they continue to think like designers, believing that research should generate ideas that are useful to practitioners (Biggs 2004). However, even with research through design being framed as useful and application-oriented (Michel 2007), many institutional structures continue to privilege research that reflects the dominant paradigm of the humanities and the sciences (Rosenberg 2007).

The paradox of ‘design research’ is that academic expectations of what constitutes research have somewhat restricted the designer’s capacity to play a significant role in shaping much of what constitutes design research. This has led to the perception, at least at many design schools in the United States, that the designers’ expertise has been dismissed, their perspective undervalued and their engagement in research seen as unimportant. Schön
discusses this by drawing attention to the dilemma of the academy’s interest in rigour and the practice world’s emphasis on relevance (1992). Reflecting on the status of the practitioner within the academy, Schön notes the sense of “abandonment or alienation” practitioners can feel if expected to defer to the “esoteric knowledge” of the academy (1992, p120). At the level of design schools, the result is that few practitioner-educators seek to research the more academic, abstract terrain of design praxis; instead more design educators are motivated to research the specific concerns provoked by their immediate fields of practice. The curricular structure and instruction style in most Western design schools often models a tacit mentor approach to studio instruction, a good example being the instructor/student interactions described in Schön’s architecture studio case studies (1987). Many design educators were educated in this way and continuing this mentor approach to teaching allows them to abdicate from interrogating the more tacitly understood, yet transferable qualities that make for an expert designer. As learning is a process of observing and doing, the explicit conversation tends to focus on issues of utility and form-making, masking the hidden curricular learning about the design process and practice (Dorst and Lawson 2009). This has significant implications for education, especially as we find ourselves moving into a more trans-disciplinary, collaborative context for design practice where designers need to be more articulate about how design thinking is distinct from other disciplines.

Yet there is an opportunity to (re)define the relevance, validity and accessibility of design research. Motivated to engage the practitioner-educator in meta-conversations about design, the approach to research modelled here seeks to transform how the practitioner-educator defines his or her expectations and ambitions for design research. My goal is to develop approaches to research into design that can embody a practitioner’s perspective and prompt deep examination of his or her base understandings of design praxis. Focusing on the studio-based design educator, this research attends to this interstitial space between the practice and the scholarship of design.

1.2.2
Toward a Design-oriented Approach to Researching Practice

With consideration for the issue that the designer’s practice expertise is not valued when it comes to research, it seems relevant to question whether designerly ways of knowing can be useful when undertaking research. Cross,
with reference to lectures by Archer, establishes a basic set of characteristics by which to assess the methods and intentions of what he calls good research (2007). The research program of this PhD explores the possibility that these characteristics – “purposive, inquisitive, informed, methodical and communicable” – can accommodate a design-oriented approach (Cross 2007, p126). In chapter 4.2.2 I make the argument that the attributes of design might productively, if unconventionally, meet the primary ambitions of these research characteristics. With this move it becomes possible to reframe how the designer understands the relationship of design research to their studio practice.

Ezio Manzini positions the practitioner at the centre of design research, not because of the methodological approach, but because “[d]esign research is an activity that aims to produce knowledge useful to those who design: design knowledge that designers and non-designers...can use in their processes of designing and co-designing” (2009, p5). This research project specifically focuses on stakeholders within the academy, privileging the designer-educator while also considering the broader community of design scholars and students. This means that the approach to research needs to negotiate respecting the expertise and motivations of the practitioner while also seeking to influence the scholarship of design and the aims of design education. Cross (2007) recognises that designers tend to value projects that are practical and appropriate, and Krippendorf (2007) writes about designers being motivated by challenges, opportunities and possibilities. I think both of these observations go some way toward explaining why the practitioner tends to resist the abstract, philosophical tone of some research scholarship. Therefore, the challenge for this project is to work with the creative studio experience while negotiating the discursive experience of communicating the research. This will support the emergence of observations about design practice that not only have practical application but also present new possibilities for how we understand and teach design.

This project works with the assumption that our predominantly theoretical understandings of praxis would be richer for being further informed by the experiential knowledge of a designer. The project recognises that the qualitative contribution the designer could make to this discourse depends upon his or her capacity to reflect upon and communicate on a way of thinking and making that might only be understood tacitly. To this end, this project adopts a multi-method research approach that seeks to enable
the researcher and the research audience to discuss a practitioner’s often-tacit understandings of design practice.

Design is often characterised as a discipline well equipped to tackle ill-defined, “wicked” problems (Rittel and Weber 1973). Given the uncertainty, complexity and elusive nature of design knowing and practice, it seems pertinent to further consider what a practitioner’s perspective could bring to research into design practice. The second half of the dissertation furthers the discussion about the possibilities of design-oriented research by arguing that a designer-researcher can tap into the distinctive attributes many scholars identify with the agency of design.
It was an interesting exercise, trawling through six years of practice. The instruction was to collect and code not just the research I identified with my PhD, but also the design projects I had done at my consultancy, the diagram classes I had taught, the research workshops I had run, the work at Parsons. I somewhat begrudgingly laid it out—but didn’t believe for a second that it was all relevant to the ‘research practice’ I was framing. The first iteration of how I organised the projects had the ‘extraneous’ work physically marginalised. A later pass had the visual essays on a timeline with the interstitial projects in between. With each iteration I was pushed to examine my practice from another frame. This exercise, which seemed like something between a studio pin-up and a visual audit of my work, was making me see everything very differently. And I don’t just mean what was revealed about my research.

What struck me was the actual exercise. I had spent thousands of hours designing, weeks of my time blogging, written tens of thousands of words… and yet, this exercise in a few days had turned upside down the whole way I understood my project. I didn’t know whether to be embarrassed or elated that it took this exercise for me to pull far enough back from my project to really see what was there.
1.3 Questions, Context and Relevance

PREAMBLE TO THE THESIS

From early on, this project has been concerned with the purchase of communication design for visualising elusive concepts, and the potential of research through design as a method for understanding how we design. Throughout I have sought to negotiate these two levels. The case study explores how a graphic design language might productively manipulate the ambiguity of visual communication. This leads to the conceptual understanding of a how designer might intentionally protract the speculative/reflective negotiation of creative practice. The notion that creative tension can be productively intensified goes on to inform the meta-level research question of whether it is possible to develop strategies for engaging practitioner-researchers in deep reflection of their practice.

In this thesis I argue that the process of manipulating the centripetal/centrifugal tensions of practice can intensify the designer's reflective back talk with the situation, the design, and the audience. The design-oriented research approach demonstrates the value of a designer operating in a heightened reflective state: attending to and noticing how he or she makes decisions and evaluates potential. With respect to researching the elusive nature of design praxis, this thesis considers the critical value of working towards, rather than fixing, an understanding. With an emphasis on becoming, the project recognises the value of operating in a suspended state of figuring out, rather than determining a fixed position. An open-ended, discursive approach allows the practitioner-researcher to have his or her background understandings challenged, in turn exposing perceived limitations of practice and revealing new possibilities to him- or herself and others. The benefit for practitioners is a more explicit understanding of the perspectives they bring to their work as designers and educators. With this insight they will be better positioned to contribute to a collective understanding of the praxis of design.

THE RESEARCH QUESTIONS

As mentioned earlier this enquiry circles around the broad question: how might a speculative, reflective practice approach to design-led research contribute to the scholarship that seeks to understand design praxis? Given the practice-led orientation, design academy context and my communication design background, this project addresses this space by investigating the following three inter-related questions.
First, how might design as a research method interrogate the often only tacitly understood praxis of design? Second, which additional methods and strategies might enable a practitioner to more deeply reflect on and share his or her understandings of design? Third, how might research into the practice of design better reflect a practitioner’s perspective, expertise and motivations? The various components of this project address these questions by attending to the domain being investigated (reflective practice and design), the methodological orientation (design-oriented research) and the community of practice (design education).

The case study plays a critical role in providing an experiential insight into the opportunities and challenges presented by design-oriented research approach. The case study, framed by the context of communication design, was shaped by two more specific questions. First, what might be the purchase of a detailed visualisation for figuring complex ideas and promoting discussion around not-yet-fixed concepts? Second, how might the elements of a graphic language intentionally promote multiple readings and critical discussion?

I understand this investigation as designerly in that it is inquisitive, seeking to explore what might be disclosed, rather than seeking to uncover the truth or the solution behind a ‘problem’. In this way the project proposes a model for design-oriented research, while recognising the diversity of relevant approaches that would be full of potential for this space.

1.3.1
Context and Relevance

Given my personal background, the studio projects of this research work with the graphic designer’s expertise in manipulating text and image to communicate, and the visual artist’s expertise in creating pluralistic work that allows the audience to construct their own meaning. In many ways, as a strategy for engaging audiences, the visualisations within the case study appear more aligned to an art practice than to visual communication. Framed by the discourse surrounding design, the research aligns with many of the objectives associated with the practice of critical design: a field interested in the potential of design artefacts that do more than embody “alternative social, cultural, technical or economic values” (Dunne and Raby 2001, p58). What particularly resonates about critical design and the objectives of this project is the ambition for the artefacts of practice to facilitate ongoing critical reflection for the designer and the audience (Bowen 2007).
This orientation resonates with the notion that design’s “thinking-differently-about-the-present” affords “a space of thinking about the possible” that is distinct from the sciences and humanities (Dilnot 1999). With reference to how this framing of the possible relates to the role of making in practice-led research, Scrivener points out how “having made such a world, one can imagine why it was made, how it was made and what it does or does not mean” (2004, n.pag). Cognitive psychology and visual studies present many theories of how audiences engage and interpret visual material, but this project is more interested in the agency behind the future-oriented process of designing (Newton 2004). Specifically, the project is drawn to enhance the capacity of designing as a research methodology suited to framing loose and unstructured problems.

THE SITUATED CONTEXT OF THE RESEARCH

The academic culture in which this research has been undertaken has shifted over the duration of the degree. Similarly to the productive conversation framed by the two practice spaces, it has been illuminating to work on the research project in two countries that have their own distinct cultural positions on design research.

The early research projects were conceived when I worked at an Australian institution responsive to a federal research agenda that emphasised the reporting and quantifying of research output. The research program and topic of the PhD are influenced by decades of conferences, symposia and papers that discuss the challenges, opportunities and frameworks for practitioners attempting to work with a national research agenda that implicitly privileges propositional knowledge. Most influential are the educators who have modelled through curriculum design and argued through papers that the creative practitioner should not contort his or her practice to work within the orthodox paradigms of other disciplines (van Schaik 2003, Crossick 2006, Rosenberg 2006, Haseman 2007). The ambition of the initial visual essay projects to explore alternative models for disseminating peer-reviewed practitioner research is both an accommodation of the federal agenda and a way of responding to the call for designers, by van Schaik et al, to claim the opportunities that practice as research presents.

The latter years of the program, including all the visualisation studies, have been undertaken within the academic research culture of the United States of America. Within this context there is a long history of independent art and design colleges that operate outside the broader university system, with no external pressure or federally funded incentive to work within a research context. This has allowed, to a large extent, art and design educa-
tion to continue a longstanding tradition of a predominantly professional practice education. The lack of a public discourse around design research further highlights the absence of external drivers to motivate a community to examine what research means within the design academy. My experience would suggest that culturally and institutionally, the marginalisation of practice-oriented research is more pronounced in the United States than in Australia or the United Kingdom.

Yet, productively, this nascent research culture also promotes the opportunity to rethink and reposition the value of research beyond federal compliance. My project responds to this context, shifting away from the formal dissemination of research to prioritise strategies that engage practitioner-educators to participate in a critical, reflective conversation about design practice through a deep interrogation of his or her own practice.

RESEARCH RELEVANCE

The model being proposed in this dissertation is conceived to engage practitioner-researchers in research that illuminates our perceptions of the agency of design. My ambition ultimately is for the collective research approach to contribute to academic discourse and ultimately result in new ways to educate novice designers about the ways designers think through making.

I have professionally experienced the importance of being able to articulate to others insights that only emerged as a consequence of this enquiry: insights that have radically changed my practice and the business model I follow (for example, in the chapter 2.1 visual essay ‘Designing a Space for Speculation’). But this research also considers more broadly how practitioners interested in a critical framing of practice might use newfound perspectives on design to simply advance their own practice. Many practitioner-educators have the opportunity to operate outside the narrow conventions of industry, but may not know how to position the contribution they bring as designers. In this dissertation I argue that by enhancing an understanding of his or her own expertise, the researcher also improves (for example) his or her capacity to articulate the value of design to a partner in an interdisciplinary collaboration, or to communicate what design thinking brings to complex socio-cultural situations.
I could tell straight away that it had happened again. From the looks on their faces, I knew I had confused my critics as to what the primary object of study was. In the beginning jurors were unsure whether they should be critiquing the potential of visual essays to disseminate research or the specific knowing the essays were disseminating. And even now, years into the PhD, I can see that it is still unclear whether the research is driven by what the visualisations tell us about design praxis or what the research method reveals about the potential of design-oriented research. I keep complicating things by wanting to both create research and think about how to create research. I try to make the topic about the visualisations as I want the project to be practice-led. Yet I can’t help but pull back to figure out what the case study tells us about design research.

The first juror is drawn to the meta-conversation about design research and design practice. The second juror is advocating for the communication design orientation focus on visualisation. The third juror counters that there is no choice as the PhD is dependent on both levels of enquiry. He argues that in reflecting upon how the different levels stand apart and come together I can propose how the sum of the research is greater than the parts.
Teasing apart the approach from the content

What has continued to be, throughout my PhD, a point of confusion is the inter-relationship between the method/approach I am advocating for (discursive visual essays as agents for critical reflection) and the subject matter that I explore in these essays (the tacit knowing designer’s embody when designing).

Many critics have got caught up in a critique of the latter, when I think my topic is about the former. And yet I persist in making it that complicated. Reading over my blog I spend an equal amount of my time reflecting upon the design process, ways of thinking or design knowing, as I do the agency of visualizations, so it is clear that I see the subject as integrally relevant and not just randomly tangential.
1.4 A Critical Framework for Researching Practice

AN INTRODUCTION TO THE RESEARCH PROGRAM

Within the context of academic research, Cross (2007) makes the case for why we need more designer-researchers: people who can bring their experience to bear on research into practice. Within professional practice there is a parallel call for workplace practitioner-researchers who use practice-based strategies including action research, reflective practice and case studies as a model for continued learning and advancing a designer’s practice (Jarvis 1999). The speculative and applied studio projects of this case study works with the expertise of the practitioner in both an academic research and applied professional context. The interlacing of designerly and reflective methods further reinforces this project’s interest in generating different ways of seeing.

1.4.1 The Documentation

![Table of Contents]

Fig. 3
There are two components to the documentation of this research program. The primary volume is the dissertation: the document you are currently reading. This text builds out the research subject by contextualising, reflecting upon and discussing the case study within the project. Chapter two begins with a comprehensive documentation of the practice-led projects and practice-based strategies that comprise the visualisation case study. Subsequent sections offer a close reading of how the design-oriented research case study was undertaken, paying close attention to how ideas moved through the research from initial hunch to developed research outcome. Chapter three reflects upon the research practice that emerges from the case study, discussing and identifying the research activities in relation to a practitioner’s expertise. In this way a practitioner approach to researching practice begins to emerge. Chapter four pulls out from the case study to frame the potential of design-oriented research by accounting for: the methods undertaken; the attributes the designer brings to the act of researching; and the role of reflection. In conclusion, I make a case for the critical and discursive potential of design-oriented research.

The companion piece to the dissertation is a website that documents the visualisation case study. This allows the reader to view the case study as a discrete body of work. For even though the case study ensures that the research experience is grounded in practice, it is critical to recognise that the PhD project is ultimately not focused on the case study’s detailed account of what I will call the productive ambiguity of the proposition diagram. The ‘project’ component of this PhD is not limited to the design projects, but also includes the artefacts of the overall research experience: the design work, the writings and the research framing exercises. Therefore, the website archives a sample of the visualisations, academic papers, research presentations and weblog posts. The primary project components are documented in the dissertation, so the full range of activities on the website do not need to be engaged with comprehensively. Yet, their inclusion as the artefacts of this research allows the reader to more closely examine the multiple methods that shape the design-oriented research program.

Consistent with Findeli’s characterisation of project-grounded research, the ‘project’ of this research is critical to the situated investigation – yet it does not represent the central purpose to generate new design knowing (1999). By documenting the project work on the website I am making explicit that in the end the projects play a support role to the knowing that emerged from the practice experience being discussed and reflected upon in the dissertation.

The dissertation has been designed so that the reader can filter the narrative to focus on the three main elements of the dissertation: the diagrams, the reflective accounts and the dissertation discussion. The diagrams affirm
that the process of designing maintains its conversation with the research discussion right up until the end of the PhD. The reflective accounts that introduce most sections adopt the style of writing developed in the research blog to reiterate the ongoing reflective conversation that has driven the research project. The dissertation represents the final step in this process, where the research experience is analysed and communicated.

Together, the dissertation, the website and the PhD exhibition comprise my final submission for this PhD by project.

1.4.2
The Research Program

Fig. 4 (p43)

The primary empirical component of this research project is the case study. This ‘case study’ shares limited characteristics with the notion of the case study as a research methodology. Consistent with the conventional understanding of case study, the project presented is situated in a professional practice context where the researcher negotiates the tension of a project that converges and diverges as evidence unfolds. Similarly this context calls for repeated revision of the research question and the use of multiple methods that require the researcher to view the situation from diverse perspectives. However, in this case the data was not generated from the interview and archival evidence typically used to build theory in case studies – as the sole investigator was an insider researching her own practice (Eisenhardt, 1989). Still, the reflections on and interpretations of the projects comprising the case study are the primary focus of the PhD discussion. Within this there are two main bodies of project work; and a distinction is drawn between the speculative, design-led projects and the more reflection-oriented research activities.

THE DESIGN-LED RESEARCH METHODS

Out of two distinct practice spaces of the case study, two different bodies of work have emerged: the visual essays and the visualisation studies. The visual essays are produced within a practice space that is always understood as research space. By contrast, the visualisation studies are not primarily framed as research, as they emerged from my professional work and represent an informed applied practice space. Together, these two contexts for
The PhD research program operates across two inter-connected levels. The meta-level of inquiry is an investigation into the potential of design-oriented research. This is framed by reflection upon the second level: a visualisation research case study. The case study undertakes a design-oriented approach to researching design praxis. From this the PhD considers how the methodological approach can further support a designer's capacity for research.
creating visualisations represent the studio-based, communication design work that comprises the design project component of this PhD.

The case study could either be framed as a research project located within professional practice or as professional practice critically framed by a research program. Both are accurate accounts. In the beginning I was undertaking a project-based doctorate where the research projects were conceived, designed and disseminated predominantly to an international community of critical practitioner-educators. Over the duration of the project however, my everyday professional practice began to assimilate what I was learning from the research projects, and subsequently the applied institutional practice began to drive the research projects. When I refer to the design projects, I mean the visual essays designed for the PhD and selected visualisations from my professional practice as an academic administrator. There are additional areas of practice tangentially that have informed my work – such as my teaching and design consultancy work – but these are not submitted or theorised in relation to this project.

In presenting the research-oriented and professionally oriented projects together, I draw attention to the importance of the reflective-conversation-with-the-situation that enables me to observe and recognise that these seemingly discrete practice spaces in fact represent one integrated practice (Schön 1992). The visualisation studies of my professional practice provide a more industrial context (albeit still within the academy) by which to apply and illuminate the purchase of the parallel research-led visual essays. This practitioner-researcher approach enables a sustained critical praxis (Jarvis 1997), making it possible to iteratively evaluate the relevance of the research for my peer community. The following table introduces the two distinct, but related communication design practice spaces:

Fig. 5 (p45)
Circling the design projects are the writing and framing activities undertaken as a form of reflection-on-action (Schön 1987). Haseman refers to these qualitative methods that inform research on practice (Frayling’s research into practice) as practice-based strategies (as opposed to the practice-led strategies of performative research). He identifies the reflective practitioner and action research as examples of research enterprises that are concerned with the improvement of practice, if not led by practice (2003, p3). Haseman may classify some of the methods within this project as practice-based, given that they provide the primary place for research on practice – the place where I evaluate the project work. However, the tactics are still undertaken by the practitioner-researcher and have been appropriated to align with the epistemology of practice. I refer to these research activities as interventions to acknowledge that as research tactics they are in conver-
sation with the design practice while intentionally not being part of the design practice. This allows these disruptions to the central research method of designing to play a complementary and critical role in understanding what emerges from the studio-based practice spaces.

There are many possible permutations from which a design-oriented approach to researching practice could be modelled. Distinct from the approach this research proposes, it would be possible to model a research program that draws on complementing the design research enquiry with social science-oriented research interventions (Fig. 2). Participatory design, cultural probes and strategies such as visual ethnography could well be adapted to align with a designer’s expertise, specifically if his or her practice has placed a greater emphasis on understanding or observing the needs and experiences of the user (for example, an industrial designer). However, the orientation of this research focuses on the humanities end of practice-based methodologies, specifically adopting a reflective-practice approach to researching design.

The activities loosely fall into two categories: writing and framing. The writing activities include the blog, academic papers and the dissertation, and the research framing activities include noticing-driven visual exercises such as the diagnostic diagrams, visual audit wall and the designed research presentations. Methodologically, both categories present a space for the designer-researcher to reflect upon the insights generated by the projects and consider ways of articulating and negotiating the research to peer communities. These tactical exercises reflect upon not just the knowing generated by designing the visualisations, but also the insights that could be gained from examining the overall design-oriented research of the case study. Whereas one conference presentation may focus on what the visualisation case study reveals about productive ambiguity, another exercise, such as the notice-driven pin-up, works with a visual audit of my whole practice as a way to evaluate the meta-narrative of the research project. Narrative enquiry is one of the key research methods used throughout this PhD, as it presents a strategy that supports the knitting together of these different experiences. More than just a description of events, narrative enquiry helps to facilitate the sense-making enquiry required to negotiate the diverse personal and social experiences of this kind of study (Clandinin and Connelly 2000). Together these research exercises call on me to step away from the process of designing to explicitly notice the back talk generated by the designed artefacts, the research situation and the conversation with the audience. In this way the supplementary reflective activities play a critical role in validating the contribution of the research.
### Reflection-Based Interventions

#### Writing Approaches
- Research Blog
- Academic Papers
- Dissertation Writing

Qualitative text-based strategies for reflecting upon, framing and questioning the insights of the research. In interrogating what the practice-led projects reveal the writing calls for close readings of the artifacts and a disciplined approach to noticing the design practice adopted.

#### Framing Approaches
- Diagnostic Diagrams
- Grounded Theory Pin-up
- Research Presentations

Practice-based strategies in conversation with, but distinct from, the studio-based design projects. Inflected by a designer’s visual expertise and solution-oriented disposition, the multi-modal methods engage with the bigger picture ideas behind the research program.

<table>
<thead>
<tr>
<th>General Domain</th>
<th>Reflective Practice: methods that facilitate deep reflection on the insights the research presents.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td>A written interrogation of the situated practice-led design projects and evaluation of contemporary design research discourse.</td>
</tr>
<tr>
<td>Objective</td>
<td>Parallel to the process of designing, the blog speculatively reflects upon half-formed ideas, then the academic papers critically account for key insights throughout the process, while the dissertation text constructs the thesis argument.</td>
</tr>
<tr>
<td>Format &amp; Dissemination Context</td>
<td>Evaluative sketches of research ambitions and project pin-ups discussed with supervisors. PhD and conference presentations shared with academic and professional communities.</td>
</tr>
</tbody>
</table>

#### General Domain
Discursive Practice: methods that inform how the research is framed, externalized and validated.

#### Subject
Visual and verbal negotiation of how the research scope, relevance and contribution is evaluated, articulated and critiqued.

#### Objective
The diagnostic diagrams are deployed before designing to frame the next research phase, the grounded theory exercise lays out all the projects for assessment, and the presentations facilitate critique of the insights throughout the research.

#### Format & Dissemination Context
Evaluative sketches of research ambitions and project pin-ups discussed with supervisors. PhD and conference presentations shared with academic and professional communities.
I was sitting with some colleagues from various institutions sharing our implicit ideas on the attributes practitioners bring to designing. As practitioners we had predictably not dedicated any time to reading the scholarship on design thinking, but as reflective, critical and articulate designers we were up for sharing our experiential understanding and debating how this could be framed for others. After hours of discussion, interrupted by sketches on the whiteboard, I went away to try and diagram a collective position on design thinking.

The resulting diagram was completely dismissed by one colleague, as it appeared to cross a line from ambiguous to cryptic. As he tried to interpret the diagram in relationship to our productive discussion you could sense his frustration at the flakiness of the artefact. Still, I was stubbornly determined to use a diagram to summarise our conversation so I went back to the metaphoric drawing board. But in my attempt to generate anything that others could meaningfully take from my sketch I found myself having to add more and more words. Eventually I gave in and began writing a table with terms and definitions. This was the first time I let myself concede that sometimes the precision of language might offer more to my own understanding as well as to the framing of the next conversation.
Project-driven

**Situated Thinking:** The ability to selectively reflect upon previous experience and apply relevant precedents while acknowledging and negotiating the unique considerations particular to the political, cultural, economic and socio-natural contexts determined by each project brief.

**Integrated Thinking:** The intellectual and somewhat dilettante capacity to synthesise competing agencies, dynamic constraints and conflicting agendas when working with a diversity of actors, deploying a range of methodologies and operating across various professional domains.

Form-driven

**Visual Thinking:** A sophisticated creative and critical ability to generate, craft, propose and interpret rhetorical and representational form making.

**Material Thinking:** The sensual fluency and literacy to access, speculate and produce a material’s properties and potential with respect to the aesthetic, functional and environmental implications of design decisions.

Ideas-driven

**Conceptual Thinking:** The expertise to think in a generative rather than reductive manner, allowing a poetic, speculative approach that supports imaginative, unexpected propositions.

**Strategic Thinking:** The analytical and creative ability to simultaneously assess a situation and project forward enabling the problem to be framed and defined as a consequence of potential solutions being proposed.
1.5 A Design-oriented Approach to Researching

The design of this research program was in part conceived in reaction to the predominantly externalised methods by which researchers have investigated the design process and design thinking. Cross (2007) writes that methods for researching design thinking can include interviews, protocol studies, simulation trials, observations and case studies, plus reflection and theorising. Yet, none of the methods he outlines privileges the practice of designing as a research method. There is an argument made that researchers may not recognise or hear the questions put forward by other researchers operating within different frames (Coyne 2005). This seems a poignant point if we consider the role of relevance or resonance within research. Cross and Schön may have independently concluded that design problems and solutions emerge simultaneously (Young and Spencer) yet they come to this conclusion by way of very different methodological approaches and account for it with different metaphors. It seems important when addressing the limited participation of the designer as researcher to ensure that researchers working within a design frame also play a leading role in some research studies. This project considers how the new perspectives that can emerge from practice might offer ways to triangulate and translate situation-specific insights into higher order understandings on design praxis that may contribute to the theoretical perspectives articulated by other scholars in this domain.

This section moves beyond situating the terms and theoretical frameworks to account for the specific research tactics this project adopts. The research approach outlined here and in chapter 3.2 illuminates not just how the insights from this research emerge but also how they are closely studied, critiqued by others and reworked yet again. Although various methods are deployed at specific phases, the research design is predominantly design-oriented reflection-on-action. This ranges from design-led reflection-in-action to interventions that allow me to stop and reflect on the overall project as well as how I am actually researching. Multiple modes of reflection allow me, the researcher, to continually negotiate the back talk, insights and propositions generated from the inter-related activities of designing, writing and framing the research.
Reflective Practice

The overarching strategy running through the above three methods is a reflective practice approach that operates on multiple levels. Reflecting is first enacted implicitly throughout the process of designing, what Schön would call reflection-in-action and what I have named ‘project-driven reflection’. The second level of reflection is retrospective and focuses on the design experience within the case study. Predominantly undertaken by written methods, these reflective activities carve out an explicit space akin to Schön’s reflection-on-action and what I have named ‘reflection-on-practice’. The third layer of reflection is largely led by the research framing exercises, and is made manifest by iterative, retrospective reflection of components of the research. This is a version of Schön’s reflective-conversation-with-the-situation (1992) and what I have called ‘research-framed reflection’.

The first level of reflection is arguably part of a critical practitioner’s everyday design practice. The second level of reflection-on-action is essential to research’s commitment to externalise practice and has a role in all practice-led research. All levels of reflection play a necessary role in the development of a design-oriented research program. Yet I would argue that the third levels are more distinctive and critical for research that seeks to make a contribution beyond the immediate field of the researcher’s practice. For by engaging in a reflective conversation with the whole research situation (not just the specific design projects), the researcher iteratively negotiates the understandings that emerge from the practice, and adjusts the research program and the next method/project to further explore the relevance of the findings for contributing to an understanding of design. Essentially, this level of framing and reflecting serves to highlight that design-oriented research calls for more than just the sharing of practice insights. The emphasis on making a contribution to design discourse requires the discursive act of negotiating and debating the outcomes until the insights transcend the immediate practice experience of the designer.

In addition, I have sought not just to undertake a design-oriented research case study, but also to transcend that research experience by putting forward research strategies from which other practitioner-educators may learn. This has led to a fourth level of reflection which involves examining how he or she is reflecting on the research itself – in this case, the disciplined reflection required to frame the evaluation of the case study and define the PhD topic. Schön may see this level of reflection on methods adopted and the way insights have evolved as akin to Dewey’s notion of...
inquiry-into-inquiry (1992), and for the purposes of this research I have called it ‘reflection-on-research’. This is not an essential part of design-oriented research, but a necessary level of engagement for a PhD that seeks to research design research. Yet, reflecting on how I am designing, reflecting and researching has allowed the research project to reveal the potential and limitations of the designer-researcher for investigating design praxis. The diagram in chapter 4.3 maps these four levels of reflection in relation to this project.

This multi-tiered approach to reflection prompts the narrative of the exegesis to candidly account for what I have noticed: recalling my false starts, wrong hunches and missteps. These design-led twists define the performative nature of research practice: exposing dead ends that become opportunities and reflections that contest assumptions. In acknowledging how the various modes of reflection serve to unsettle or shift my own perspectives on design, it becomes more evident that a critically reflective engagement with design can promote new understandings of practice, at least for the practitioner.

1.5.2
Adapting Research Strategies and Methods

Given the design-led, yet knowledge-productive aims of the research, it is important that the research methods and strategies align with a practitioner’s way of thinking while ensuring a level of critical reflection, contemplation and communication that exceed the expectations of everyday practice.

It is no coincidence that Mason’s notion of ‘noticing’ as a methodological approach to research shares characteristics with Findeli’s grounded theory/action research approach. Both approaches underscore the relevance of emergent and cyclical research when it comes to researching your own practice (Mason) and project-grounded research (Findeli). Both approaches are sympathetic to the design process, accommodating the need for the designer to be in a “constant process of revisiting the problem, re analyzing it and synthesizing revised solutions” (Swan 2009). In many ways my approach to the research operates as a designerly take on action research, an instinctive approach for designers that Alan Fletcher describes as a process of “search, discovery, recognition and evaluation” (cited in Swan). Co-opted by a designer, the conventional cycle of plan > act > observe > reflect can be reframed as phases: propose > make > discuss > reflect. Beginning with an idea, a hunch, the first act is to make a design move by putting forward a proposition. After putting the designed artefact out into the world, I follow up by critically considering the implications of the process itself and
the material artefact. It takes some time to arrive back at the beginning of the cycle, but it is clear that the next project’s beginnings are informed by a new set of questions, revised hunches and another plan of action. Yet the process described here is not as collaborative or participatory as action research plans set out to be.

Mason presents ‘noticing as research’ as similar to yet distinguishable from action research. Mason argues that:

> noticing as research emphasizes the same person doing the planning-preparation, the experimenting, the observing of effects, the evaluation of results, and the reflecting with the support of colleagues, all through monitoring their own participation, through developing their inner witness (p200).

Similarly he recognises the similarities with grounded theory, while defining where the methods differ. Mason outlines how grounded theory and noticing as research use observation to reveal or challenge theoretical positions, acknowledging their shared interest in seeking out “features which contradict or complexify” what has been observed so far (p201). The distinction he sees between grounded theory and noticing as research rests with the weight grounded theory places on observations as data. Noticing, in comparison, places less emphasis on analysing to espouse a theory, casting the analysis of accounts as being motivated to provide access to insights and experiences for both the researcher and his or her community of peers to contemplate (p202).

My dominant strategies, introduced in this section as designing, writing and framing (and further detailed in chapter 3.2), have been used consistently throughout the research project. At intense periods this has translated to working across all modes in one week, yet at other periods a month has passed between blog entries or presentations at work. These general practices have also been disrupted by specific interventions, the most regular being short bursts where I have undertaken a visual audit of precedents, or focused literature searches around specific keywords.

**DESIGNING, WRITING AND FRAMING**

The core tool in the designer’s capacity to structure problems by way of proposing solutions is the design drawing (Cross 2007). Through the act of “pro-posing into the virtual spaces of designing” (Tonkinwise 2007), the designer’s sketch attends to and seeks to better understand a unique and complex situation. To further reiterate this point, Lawson cites the architect, Richard MacCormac, when he describes drawing “as a process of criticism
and discovery”, where the problem being addressed “only becomes apparent as you’re trying to solve it” (1994). The material act of sketching drives the critical act of reflection and in turn illuminates the potential and limitations of a situation. It is through this process of drawing to externalise the designer’s ideas that the back talk of designing is most commonly triggered.

This characterisation of designing illuminates why mapping and diagramming are strategies particularly relevant for exploratory phases of research. For this project I work with the features of mapping – to collect, record, explore, trial or question – as a strategy for locating the research and myself (Vaughan 2004). For example, the visual essays aim to investigate, through designing, ideas about the design process or design thinking of which I did not already have a clear understanding. The act of designing into the virtual space of the visual essay affords both a speculative and a reflective process by which to examine my tacit understandings of practice. Interpreting the co-evolution of problem and solution as a speculation-led approach to reflection informs the hunch that a design-led approach might be more adept at investigating the wicked and elusive problem of researching design praxis than a problem-oriented approach to researching.

If designing is the primary method for researching, the critical framework of the research project needs to amplify the back talk the designing generates. This involves not just the externalising of ideas through drawing, but also identifying strategies for reflecting on my design actions. For the majority of the PhD my research blog has provided the primary mode for writing. I blog to better understand what I am reading or to think ‘out loud’ about the ideas I am trying to design. But much more than this the blog provides a shared receptacle for attending to the increasing back talk within and between the research and professional practice spaces. Taking it one step further, the blog comes to facilitate the active reflection on the scope and framing of the research project.

I have found that sharing initial, unformed ideas in a tentative post is a powerful tool for reflection. Writing and reading are both evaluative acts that allow me to critically frame my next move and, as importantly, they offer a process by which I can cross-check the relevance of my newfound understandings with others.

In Design Expertise the authors identify five key design activities: move, represent, evaluate, manage and formulate (Dorst and Lawson 2009). Within the ‘formulate’ activity they underscore the high-level act of framing among design experts, recognising the relationship between quality design outcomes and the capacity of the designer to frame the project.

Both the acts of designing and writing have each informed how the projects within the research have evolved. However, my most explicit moves to frame the research project seem to have come from hybrid activities that
draw on written or verbal content as well as designing. If the work-in-progress critiques and blog writing are the everyday spaces by which the project tentatively introduces ideas to others, the act of framing the research project (including supervision, regular research presentations and peer conversations) establishes the whole research program’s overlying critical framework (van Schaik 2003). The preparation and performance of each PhD presentation have led to the most significant leaps in framing and moving the topic forward. The public process of presenting the work has productively illuminated the value of rigorous attention to detail in structuring a verbal and visual presentation. I have come to understand the social practices of critique and formal presentations as both a generative space for sharing not-yet-known ideas and a critical space for proposing refined ideas. With each new frame, a new way of seeing the visual essay, visualisation study and/or the research project has emerged. I return to the rich observations offered by multiple frames in chapter 3 of this dissertation.

1.5.3
The Integrity of Design-led Research

For the design activity of this research to transcend everyday practice requires the development of a critical framework for self-interrogation. Mason describes the activity of researching a designer’s own practice as the “discipline of noticing”, underscoring the capacity to account for a designer’s practice in ways that resonate for others. Establishing relevance is key to Mason’s argument, as he asserts the critical role of sharing with a community of practice as being about checking whether “what we think we see is visible to others” (2002, p191). Mason claims that methods employed under the discipline of noticing framework acknowledge the subjectivity of the approach.

Instead of trying to circumvent the inherent subjectivity of experience, objectivity is achieved by working through the subjective (personal observation) to achieve objectivity in resonance and confirmation with others. The objectivity gained is not external and analytic, but rather internal and synthetic (p192).

This emphasis on resonance calls for the research insights to be not purely idiosyncratic but “a live option within the design context” (McLaughlin 2006, n.pag).

Sally McLaughlin puts forth a model that assumes that the development of artefacts is at the core of practice-led research. Yet McLaughlin argues
that it is too onerous for the integrity of practice-led research to rely on the artefact proving its world-making significance. Her argument seeks to eliminate the need for practitioner-researchers to post-rationalise how and when insights came to them, or defend whether the artefact itself opens up new ways of knowing. McLaughlin proposes that her model is one where:

...the shift from practitioner to practitioner/researcher might be conceived as a shift from a state where the practitioner proceeds with an implicit, tacit understanding of the design situation to one where the practitioner/researcher actively interrogates and validates their understanding of relevant aspects of that design situation. (2006 n.pag)

For McLaughlin the validity is linked to how the research insights are framed, articulated and examined. Linking the formation of insights to a discursive practice of collectively negotiating the back talk of the research echoes Schön's observations of the power of “collaborative inquiry” (1992, p136) and Tonkinwise's belief that sharing our accounts with others ensures that the back talk rises above narcissistic delusions (2007). My research approach perceives that externalising the back talk of practice is central in accounting for the rigour, integrity and candour of the practitioner’s reflections. In this way, the practice-led orientation of the case study illustrates the critical role played by the artefact in interrogating the potential of the research, while the reflection-based interventions address the additional requirement to externally verify the contribution of the research.
CHAPTER SUMMARY

This research project creatively explores design-oriented approaches to research as a productive sidestep from the defensive position of asserting legitimacy by mirroring other knowledge-productive disciplines. In this way my research makes a designer’s move by experimenting and putting forth an approach for researching practice that is in stark contrast to the abstract, theoretical debates about the potential or limitations of research through design. To this end, the material and theoretical evidence of the dissertation asserts that a designerly way of researching need not be defined by the objectivity of the research methods or the scholar’s capacity to critically interrogate the construction of an argument.

The above methods and strategies repeatedly point to the purchase of imagining solutions as a negotiation tactic for evaluating a situation. My multiple-methods approach of deploying performative and reflective strategies is supported by a verification framework that can further my design-oriented agenda while validating the contribution of the research. In proactively developing a concrete proposition for a relevant, appropriate practitioner model for researching praxis, this project presents an alternative to critiquing the academic discourse that largely defines the scholarship of design research.
CHAPTER TWO—
The Case Study
CHAPTER TWO—
The Case Study

This chapter introduces the design projects that ground this research. With practice being the dominant research methodology in this chapter, the act of designing documented here represents the ‘action’ component used to investigate the first two research questions of this PhD (chapter 1.3). Explicitly, the visual essays seek to interrogate notions of design praxis, providing a critically framed and contemplative space to examine my tacit understandings of designing. More indirectly, the different practice spaces allow me to explore, in a research context and through my professional practice, ways to align the research methodology with my expertise and motivations as a practitioner-educator. I am the sole researcher for this case study, with my studio-based research practice being the subject under investigation. By placing my own practice at the centre of the research I can explore the broader question of how a reflective practice approach might contribute to the scholarship that seeks to understand design praxis.

As part of an atypical case study the visual essays and visualisation studies are not simply data sources to be analysed. The emphasis here is more on deep self-reflection and the discipline of noticing as a strategy for researching one’s practice. However, the intent of this chapter is not to account for the particulars of what the visualisation research projects disclose (about communication design), but to transcend that specific field of design to consider what the experience of undertaking the practice-led research case study reveals about the potential of a design-oriented approach to research. The visualisation case study is to be understood as part of a larger research project on design-oriented research.

The two-part process of reflecting on the act of designing and analysing the form and utility of the visualisations leads me to name the graphic language adopted for these projects ‘proposition diagrams’. From these highly situated, individual projects, I consider the discursive experience of designing proposition diagrams with respect to notions of negotiation and potential. Dilnot argues that:

Essentially design is nothing else but the encounter with realities (actualities, situations, circumstances, conditions or experiences) in terms of their transformative possibilities and potentialities. Design opens these possibilities through initiating a process of negotiation with the given which extends the boundaries of the previously possible (2005, p2).
On a local level the narrative in this chapter seeks to offer a practitioner’s perspective on this theoretical framing of design. The narrative discusses how the proposition diagrams are the product of the speculation-led reflective practice of figuring and goes on to reflect upon and articulate the negotiative act of designing. On a meta-level the attempts to translate, through text and image, the space between the speculative and reflective push and pull of creative practice also represent a way to enact Dilnot’s notion of designing. From this perspective the act of ‘designing’ a research program becomes a strategy by which one can explore what is possible with respect to practitioner-led research. The “negotiation and translation” of the practitioner’s insights into articulated perspectives offer a grounded example of the role “consensus, dialogue and interpretation” might play in design-oriented research (Dilnot 2004, p8).

To this end the chapter explores the outcomes of the case study with respect to the specific knowing generated and what these outcomes might teach us about practice. The chapter concludes with a visual narrative that discloses how the multiple-method approach has facilitated a discursive, reflective environment in which to negotiate and advance the research insights that have emerged.

### 2.1 Research and the Practitioner

Manzini (2008) makes an interesting case for why the discourse of design research should move on from discussing methods to emphasising results, arguing that if the contributions of design research are solid then presumably the methods adopted are too. The reason my research still chooses to stress the methodological orientation of the research is not so much to legitimate the approach, but more to acknowledge the unique contribution a design-led orientation to research can make. Jonas makes this point when he compares research about or research for design to research through design, arguing that the latter is the “only genuine [my italics] design research paradigm” that can advance the methodological practice of the discipline (2007, p187). This assertion lends support to the idea that we need to identify research characteristics that will align with the value system of design practice (Coyne 2004, Cross 2007, Scrivener 2004). In making this move, we need not be defensive about the fact that design-led research makes no claims to objectivity and can instead embrace the purchase of a subjective, situated grounding for research (Findeli 1999). Drawing on the future-oriented nature of design would allow design research to be led by what might become, as opposed to being wedded to theoretical accounts of what is (Rosenberg 2007).
In the beginning I just wanted the research to be visual – I was thinking about the design community and was focused on their visual literacy. Once the research began I jumped to the conclusion that the dissemination of design research would be driven by outcomes that engaged the audience in considering the potential – I’d stopped thinking about the form and I was now thinking about the content. Following a PhD presentation I now saw with great clarity that I wanted to work with the designer’s capacity to negotiate – I was no longer focused on the form or the content, as I was now motivated by the discussion.

Sometimes it felt like I didn’t know what I was doing; yet as new insights emerged and old perspectives were challenged I came to appreciate the exploratory and opportunistic approach I had followed. I may have implicitly already known how to design, yet these research experiences were teaching me to notice and then really ‘know’ what it meant to think and work like a designer. Every time I could articulate a new perspective on design I came a step closer to asserting how valid it might be to bring a designerly way of thinking to research.
INTRODUCTION: KEY QUESTION

Can playing to a designers' visual literacy enhance a dissemination model's capacity to influence both the practitioner-researcher's self-understanding and the purchase of practice-led research for the design community?
2.1.1
Interrogating Practice

Cross presents a useful summary of disciplinary value systems that can be used to inform ways of framing design research. He characterises the sciences as being concerned with objectivity, rationality, neutrality, and a concern for ‘truth’. In comparison, the humanities value subjectivity, imagination, commitment, and a concern for ‘justice’, whereas design values practicality, ingenuity, empathy, and a concern for ‘appropriateness’ (Cross 2007, p18). These distinctions go some way toward explaining why a design-led approach might value practicality over objectivity and why a concern for appropriateness might trump the scientist’s dedication to truth. Indirectly, these associated values support the hunch that a practitioner’s insights and research experience would be distinct from those of the philosopher, psychologist or historian.

REALISING THE POTENTIAL OF PRACTITIONER RESEARCH

This research project seeks to explore the tension of how the practitioner-researcher might address the issue of explicating to others the knowing that emerges from a situated research experience. For with respect to my broad ambition to inform how the academy defines design and how that knowing will ultimately inform education, I agree with Friedman’s statement that “the ability to theorise design enables the designer to move from an endless succession of unique cases to broad explanatory principles that can help to solve many kinds of problems” (2003, p515). I can also agree with his claim that “it is not experience, but our interpretation and understanding of experience that leads to knowledge” (2003, p521). Yet, I imagine that the point of contention between Friedman’s and my expectations might be tied to the nature of the knowing that practitioner-led research can reveal. For these reasons, I value exploring this issue from the perspective of a practitioner.

This project’s starting point is that the reflection a designer brings to everyday practice does not offer the level of criticality the practitioner-researcher needs to meaningfully corroborate his or her insights (McLaughlin 2006). So, even though the project recognises the potential of the perspective the designer-researcher can bring to researching practice, it also asserts that additional reflection is required to translate and legitimate the experiential knowledge of the designer. Ultimately, the contribution the designer (or any practitioner for that matter) makes to academic discourse
will depend on his or her capacity to reflect upon and communicate a way of thinking and making that he or she might only tacitly understand. An objective of this research was to consider an approach to research that would address the motivations and expertise of the practitioner and the opportunities and limitations of design practice. This is a distinctly different approach to Friedman's analysis of why design needs to build theory. Where he chooses to critique and assert the importance of theory, I am empathetic to the position of the practitioner and seek to frame the potential of research for that audience. To do this, I decided that it was essential that I undertake this research through an embedded approach to enquiry that would reveal the background practices of designing that a designer can at times struggle to identify and articulate.

The call for in-depth reflection depends on strategies by which the practitioner-researcher can more critically interrogate his or her practice as well as discuss and shape his or her observations through debate with others. The integrity of this research project in particular, and the design-oriented approach in general, are accommodated by these two moves by addressing how the researcher reflects while designing and considering how the designer can reflect upon the research as it emerges.

First, the reflections-in-action that are already embodied in everyday designing needed to be intensified. In the case study, I address this by creating visualisations. I set out in section two of this chapter the ways in which the visual language adopted for the visualisations calls for greater reflective engagement by the researcher. In addition, the visual essays use the content of the essay itself as a forum to directly explore the praxis of design and, in turn, work with the potential of non-verbal communication for addressing tacit knowledge.

Second, my emphasis on a discursive methodology calls for an elevated commitment to “postspective” noticing (Mason 2002) or Schön's reflection-on-action. To do this, my research program customised a number of research practices from outside the design field. I have previously characterised these activities as reflection-based interventions since they intentionally disrupt the somewhat introspective design experience and call for a different level of critical reflection. In addressing the issue of situation-specific knowing, the research approach modelled here calls for activities whereby the designer as researcher steps outside of his or her practice experience. This is particularly relevant given that the research seeks to contribute to what Jonas would call research about design (2007), and what Frayling called research into design (1993). If the research is to operate at the nexus between research into and through design, then the practitioner must examine the practice experience from outside if he or she hopes to refine and communicate the knowing in a way that tran-
scends the specifics of not just that particular context but also the sub-field of design.

Consequently, my research program works with my own expertise as a designer developing a multi-faceted approach that uses the designer’s ability to tackle situations from multiple perspectives (Dorst and Lawson 2009). Yet, mindful of the desire for the research to be about more than just advancing my own practice, the program is both structured to generate work across speculative and applied practice spaces. In this way I have tried to ensure that the research program aim to engage various different stakeholders, thereby broadening the context by which the potential insights can be discussed and evaluated.

Given that the underlying ambition of this research is for designers to make a distinct and valuable contribution to our understandings of practice, it was not an option to import wholesale various methods incommensurate with the values and expertise of the designer. Therefore, the inclusion of research activities from fields external to design requires consideration of how and in what ways the approaches can be adapted to embed the qualities of a design-led approach.

The idea of borrowing or adapting methods from other disciplines is not novel. What is of interest for this research is how the findings of the visualisation case study play a significant role in disclosing how reflection might be intensified in a design context. The knowing disclosed by the design-oriented research experience points to why and how, as a designer and as a researcher, it might be possible to build a multi-faceted research program. In accounting for the knowing that emerges from the primary artefact of the case study (the proposition diagram), the next section reveals how the interrogation of my practice through design and discussion has led to a newfound understanding of the design practice.
2.2 The Speculation-led Reflective Practice of Figuring

This section documents the visual essays and visualisation studies that comprise the major design projects of the case study (and subsequently the PhD). The design work is complemented by short summaries of each practice space that serve as extended captions to contextualise the projects. This section is an excerpt from the full case study, which is documented on the research website.

At the centre of the case study is the practice of ‘figuring’. Figuring is the name I have adopted for a designerly way of drawing, emphasising how the visualisations operate as performative research artefacts. The theoretical basis for figuring loosely builds on Rosenberg’s characterisation that the “fragile balance” of creative practice comes from negotiating the centripetal and centrifugal forces at play. Adapting Bakhtin’s idea, Rosenberg describes the centripetal impulse as the pull toward what we know, to draw connections with established practices, as opposed to the centrifugal impulse that is motivated to explore the unknown, to deviate from the normal and seek new possibilities. Rosenberg (2000) argues that the push and pull of designing is negotiated by the “creative tension” that comes from this “pull to originality”.

In the case study, I have used the practice of figuring to explore a new form of drawing that seeks to intentionally disrupt the designer-researcher’s creative process. I have called this the proposition diagram, which I have employed strategically to sustain the period of speculative reflection. The term refers to the coming together of two modes of drawing that Lawson describes as being at the heart of the design process: the diagram and the proposition sketch (2004, p45). This visual language integrates the diagram’s reflective ability to provisionally fix certain elements so the designer can navigate complex moving pieces, with the proposition drawing’s speculative capacity to put forth possible ideas for a situation the designer is still exploring. The following design projects showcase the visual language de-
THE VISUALISATION CASE STUDY

Design-oriented Research

The design projects of the case study led the inquiry into design praxis, with the reflection-based interventions playing a critical role in translating the practice experience into research. The visualisation projects were generated in different practice spaces, creating two diverse contexts by which to propose and evaluate the potential of the research. The design-led research cycle of inquiry further provided an iterative approach to reflection and action.
ployed in the proposition diagram. Meanwhile, the various research essays and professional visualisation studies represent different kinds of engagement with this reflective drawing tool. The full case study further elaborates the characteristics of the visual language and details the facility of the proposition diagram for the designer-researcher seeking to contribute to an understanding of the process and knowing of design practice.

The context for the visual essays is a research conversation framed by an investigation of design praxis, whereas the context for the visualisation studies is a professional conversation framed by an exploration of design education. However, at first the visualisation studies were simply responding to developments at work and are only retrospectively understood in relation to this project. It soon appeared, however, that the utility of the professional graphics aligns directly with the agency of the visual essays. Both visualisations primarily work to critically and creatively advance the designer and his or her peers’ understanding of the subject being visualised, whether it be an abstract exploration of design thinking or an applied negotiation of curricular changes.
2.2.1
The Projects

Visual Essay #1:
Designing a space for speculation

This visual essay directly refers to a situated engagement with design praxis and seeks to share with other practitioners how we evaluated and refined the creative process we adopted with clients. Working from the idea that the realm of design is about possibilities, this first visual essay considers what this means when it comes to getting the practice community interested in the outcomes of research. Could the objective of sharing practitioner-research be about enabling possibilities in another’s practice rather than accounting for what happened in a case study format? Interested in rethinking the challenge of transferability as it related to situated, design-led research, the idea is that the localised knowledge from a particular situation could be understood as transferable by interrogating and visualising the more tacitly understood process behind the project artefacts. If the artefacts are presented as secondary and summarised conclusions are avoided, the text could directly speak to the potential of the research for others.

The extended 12-page visual essay was designed for a peer-reviewed, yet professionally oriented journal published by the *Australian Graphic Design Association*. 
Hunch (what were we thinking)

To state that I once hated graphic design is neither provocative, nor original. Many graphic
designers before me have felt boxed in by a job that only fractionally seems to be about designing.
As a student it was the verb I had fallen for—not the typefaces or the paper samplers—I fell in
love with the process of creating designs; from the slow-burning hours of contemplation, the
rush of possible ideas, to the focused, micro world of refinement. But with clients and production
schedules dictating that I work efficiently, my design process became repetitive, my work
formulaic and my job satisfaction nil. In establishing Studio Anybody my colleagues and I sought
to reclaim a design process that valued speculation—an experimental, investigative space—where
we hoped design could once again reside in what Clive Dilnot refers to as the ‘realm of possibility’.
Background (what we already did)

Like many small, young practices, we were kept busy by working on pretty much any commercial work that came along. We soon observed that the prescribed nature of the conventional design process down the path most traveled succeeded as an account management method that provided the client with something known and familiar, but we were wary of how this expediency constrained designers to design around what they already knew. Given that our client-led projects always seemed to predetermine the outcome in the initial presentations, we decided that in establishing Studio Anybody our practice model had to accommodate an alternative space where project management would come second to a speculative poetic design practice. We achieved this by introducing studio-initiated projects that offered us a space for researching through designing.
Move I (what we set out to do)

Our first move was to establish, alongside our commissioned client work, a stream of studio-initiated cultural projects: exhibitions, public projects, publications and editorial work. These client-free projects set out to assert that even within a professional studio environment it was possible to nurture a space for experimentation and speculation. For the designer’s the key question had become ‘what might a commitment to design-led research offer a professional practice environment’? We saw our speculative stream projects as an excuse to decelerate the commercial process enough so that we could experiment and be reflective outside of the time-starved treadmill of client projects. This critical space for speculation allowed us to reclaim an iterative design process where we could once again follow tangents, embrace serendipity, step into the unknown.
Move I Reflections {what happened}

Clearly and immediately the speculative stream began to inform the commissioned work, most noticeably with the public reception of the exhibitions inadvertently operating as a new business strategy. From the beginning the projects funded themselves by introducing us to clients with higher profiles and more ambitious projects. With these clients came elevated expectations for what we might create, complimenting the heightened ambitions of the studio designers’ whose newfound confidence had become the unforeseen consequence of directing projects to their own standards. It is of relevance that the studio-initiated projects immediately advanced the work we produced for clients, albeit only on a superficial level. We had not begun to critically reflect upon why the studio-initiated projects were successful, nor had we fundamentally changed how we related to clients.
Move II (what we learnt)

Inevitably, framing the studio as a space for researching-through-designing afforded us an experiential understanding of design as a poetic process. We now needed to identify the practical implications of adopting a speculative approach to designing within a commercial environment. For our next move, we had to articulate and assert this new knowing to our clients. In educating our clients about why their projects would benefit from accommodating a speculative poetic process, we could present an alternative way to consult on our commissioned projects. The work we did with Melbourne Fashion Festival from 2001-2004 exemplifies a collaborative process between designers and client that, for us, embodied best practice since it allowed us to negotiate a space for stepping out into the unknown and responding to new ideas very late in the project.
Move II Reflections (what we discovered)

In the process of reflecting critically on our experience we were compelled to translate our studio experience so far into words. Words that would help to communicate to others what we had only implicitly understood when we began this inquiry. With the artefact supporting our claims, we sought to present well articulated arguments to clients to persuade them of the propositional nature of designing. The process of communicating our experience to others, in turn enabled us to see more clearly how we should proceed. Progressive clients like Experimenta engaged in these discussions, allowing us to conceive of a completely different way of designing, critiquing and managing our projects with them. As a consequence of these conversations we began to see how we could see our practice as a body of work, rather than a series of discrete unrelated projects.
Move II Observations {what was disclosed}

Working on the studio-initiated projects in the speculative stream had predictably extended our reservoir of ideas—generating the new conceptual and formal strategies that directly fed into our client projects. The process of sharing our experience on this research project with the professional and academic community disclosed to us the more subtle rewards arising from initiating our own projects. The extended timeframe of the projects allowed the process to not pre-determine the outcomes and the projects to not fall into some house formula. We further observed that the luxury of being able to conceive and develop our own studio projects had led us to unconsciously developing several conceptual and formal threads within our body of work. Once identified, we set out to consider how we could work with them to make our practice stronger.
Move III (what was enacted)

We needed to ensure that the conceptual and formal threads running through our practice were not interpreted as simple derivations of earlier ideas—as we were consciously trying to avoid any particular signature or house style. The process of consciously reflecting on why we had adopted these threads culminated in the decision to give them a name: culture sampling / imperfect beauty /public intimacy. In naming the threads, we developed a means by which to refer to them explicitly—which we did on the website and in future folio presentations. The merit of framing our body of work under these headings was valued internally because it allowed us to establish what we were investigating and, externally, the thread conversation was constructive in situating for clients the socio-cultural precedents that allow these investigations to surface.
Move III Consequences (what was advanced)

In establishing that the threads that ran through the studio’s practice were informed by the contemporary condition, we felt that we could frame our contribution to client projects as more than simply emulating stylistic fetishes. And in situating the threads in relation to current trends we were also able to translate why work need not emulate the same style to engage the same audience. Within the studio, the threads gave us a critical line of inquiry by which we could evaluate the enduring popularity of a previous project and assess how future projects might be developed to elicit similar audience response. This editorial commissioned for Poster magazine presented a playful opportunity to consciously explore, in the one project, new ways to investigate how audiences might engage with pop cultural references, clumsy intimacy and formal imperfection.
Conclusion (what we took from it)

Our ambition was to initiate a practice model where the rhizomatic, poetic nature of the speculative stream would generate a reservoir of ideas for the commissioned client stream—in many ways we succeeded. It was clear that the timesheet hours we committed to the studio-initiated projects not only generated a playful body of work that aesthetically and conceptually influenced our client projects, but that they also advanced our client base, personal confidence, technical skills and the way we negotiated our client relationships. These outcomes are all a consequence of the speculative stream of projects helping us to elucidate in what ways, and to what extent, the design process we adopted directly informed what we created. Essentially, it was our experiential understanding of what a speculative process offers that advanced the way we practice.
Potential (what might resonate)

The point is that any knowing described here came out of our experience and, predictably, that experience was determined by the cultural context and operational particulars of the studio. The issue (for some people) is that this research project is not verifiable because it cannot be repeated. In the domain of design research, it does not seem that the steps we went through are (or should be) of much significance to others—as there would be little merit in reproducing what happened at Studio Anybody. For if design is propositional by nature, then ideally this account would simply provoke practitioners to investigate their own practice, for instance to ask: does my practice invite a space for speculation? Do I believe that the act of designing is intrinsically about stepping toward the unknown? Could my professional practice really benefit from following a path of uncertainty?
Visual Essay #2:
“The design process: three perspectives”

This visual essay arises from a collaboration between a designer and theorist and seeks to visualise different perspectives of the design process.

The essay was designed as part of the conference paper ‘Designing Design Schools’ I co-authored with a design theorist (Grocott and Marshall 2005). The visual essay and paper were questioning whether design as a propositional, inquisitive practice could be deployed to inform the way design schools are envisioned and led. The practice of design being explored is one that discloses the complexity of a specific situation in order to deal with the technological, cultural and political issues at play.

Developing multiple conceptions of the design process allowed my colleague and myself to explore how designing might operate as a meta-process. The different perspectives put forth drew attention to the different design attributes required to work with the different orientations to designing, while also leading us to conclude that design’s transformative ability to negotiate complex, dynamic systems will be dependent upon being able to synthesise a diversity of qualities we associate with practice.

The essay was designed as an integrated part of the paper and submitted as part of the peer review process. The visual essay was also presented to the community of design educators at the Envisioning Design conference (2005).
Mapping Investigations (The Lenses)

A research–oriented conception of design practice. Questions are framed, decisions are made and biases disclosed regarding how the situation, the issues, the problematic and the context will be investigated. The analytical yet creative responses to questions posed in the ‘lens mode’ allow the designer to know the field, the context and the ecology of agents at work. Each proposition made reshapes the ‘field’ and prefigures the next move that is now sensitive to a set of possibilities that would not be anticipated at the outset. The authority of the designer is demonstrated through their ability to slip between evaluating the big picture while paying attention to the particular.
Mapping Speculation (The Ideas)
A poetic approach to design that promotes a critical engagement with a speculative practice. The iterative nature of speculation makes it possible for a process that is not predetermined nor directionless. The process can respond to happenstance yet not be without a sense of destination - no matter how provisional. The ideation process therefore preferences a discursive engagement between speculation, reverie and analysis—requiring the establishment of a propositional space for ideas to be put forward, critiqued and developed. The authority of the designer is asserted through their creative ability to not predetermine the process, yet be responsive to the nuanced, subtle particulars of the situation.
Mapping Integration (The Strategies)

A highly structured approach to designing that deploys a series of integrated strategies to assess and engage different constituencies at determined moments throughout the process. The ‘strategies mode’ promotes a more audience centered, inclusive process that stages interventions by playing off the centripetal and centrifugal push / pull between looking to others for information, observations, analysis, feedback and insights, then returning to work independently until the next phase of engagement. The authority of the designer is understood in relation to managing the complexity of concerns and conditions to be negotiated.
Mapping Transformations (The Design Process)
A sophisticated approach to design that seeks to synthesize the investigative, speculative, integrated approaches previously introduced. In understanding these modes as not distinct, but aligned practices it becomes possible to understand a different agency for the field of design. This design practice promotes a critical, poetic and interdisciplinary approach—an approach that operates at the intersection between framing the field, speculating on the possibilities and negotiating the complexity. The agency of the future oriented nature of design is captured in its capacity to promote potential. The authority of this design process is in operating at the nexus between analytical, creative, methodological approaches to designing, maximizing the transformative potential of the field of Design.
Visual Essay #3:
“Negotiating lights on / lights off”

This visual essay pulls back from the specifics of the process of designing and seeks to present an abstract visualisation of design thinking.

Distinct from the earlier objective to disseminate design research, this last visual essay was motivated to see whether a visual essay could emulate for the reader the designerly experience of wanting to dive in and make sense of unfamiliar terrain. In this way I sought to create a design artefact that could be described as asking carefully crafted questions, rather than solving problems (Dunne and Raby 2001). Beginning with a research paper titled ‘The Reservoir’, the essay sought to simultaneously notice and reflect upon Rosenberg’s idea of the centripetal/centrifugal tension of practice (2000). Examining Rosenberg’s idea through the lens of design thinking, the essay uses diagrams and text to question how the designer might integrate strategic and poetic approaches to thinking through a situation.

The visual essay was commissioned for a critically framed, practice-oriented design journal *The National Grid* (2006).
You were saying you wanted to know everything / I was saying that I wanted to see silence / You had to be here, in Brooklyn, in this room / I had to be out there, anywhere, in the landscape / You wanted the lights on / I wanted the lights off / You were talking about sex / I was thinking about my PhD

Jean and Etienne were saying abstract representations are meaningless / Their point, the ‘power of abstraction’ only comes from someone relating it to a specific situation

I am doing it again / Listening by talking about myself / It is how I listen, how I understand / But I should be able to do this without talking

I always go on about Terry / I like the way he talks about design / About speculation as open water / About surveying the ground as excavating / For him, the creative program is always in fragile balance / For me, it’s always in negotiation / For me, this push and pull is where the agency of design rests

I was bored with the specifics of your story / You didn’t see the relevance of my generalizations / We always argue like this / Two designers / We should be skilled at navigating between the concrete and the abstract / Between the conditions and the program

For Jean and Etienne the notion of participation blurs the standoff / Between abstraction and experience / Between contemplation and involvement

Clive talks about design as the realm of possibilities / He says science and the humanities describe the world / But design...he makes that sound far sexier / Calls us world makers / Not in an arrogant architectural way / But in how we ask ‘what if’, instead of asking ‘what is’.

You said you liked that the narrative wasn’t written into the script / I agreed that the story lay in what was left unspoken / We stopped analysing the film and walked home in silence

At the studio we claimed that our pieces read like a beat script / An invitation for the audience to complete the narrative / To make the situation resonate / An invitation for reverie

Luke wrote something like imagination, innovation and invention / Made me wonder about imagination / Made me wonder how we imagine a new script—a new world

You said there were too many questions left unanswered / I liked that I was still working out what the questions were

I loved Zora’s chapter opening / There are years that ask questions and years that answer / It took me a decade to work out I wasn’t so interested in the answers / I need to question so I can wonder / I need to speculate so I can imagine

I don’t want to tell you how it is / I try to end with a series of questions / But you tell me you want more / I understand / Because I also want more from you
I wanted a visual strategy. One that would make people not just passively reflect but really get inside the ideas of the essay. I wanted them to think for themselves, to think about how they designed. I remembered the childhood experience of filling in a join-the-dots illustration and how it simultaneously allowed me to imagine what the drawing might be, while giving me clues to work it out for myself. Democratically I liked the idea of the audience owning the essay by drawing into it, but I didn’t want anyone thinking I thought the design process was as predetermined as painting by numbers. I wanted the audience to experience the process of designing—the calculated moves and intuitive leaps of faith. The muted blue was to assert that there was nothing black and white about the process. The duplication of some numbers was to underscore that there was no single path to follow after all.

In the end I never heard of or witnessed anyone drawing on the essay. No one even referenced the join-the-dots metaphor. Still. With every reading I witnessed another designer’s perspective on the process of designing and from this I learnt as much as I did from my struggle to design the essay.
ITERATIVE DREAMING
Visual Essays

In the visual essay practice space I designed and disseminated three different essays over a period of three years. These research-led visual essays present a body of work that seeks to visualise how designers think through the process of designing. Each essay explores and proposes a different conceptual frame by which to visualise the process of designing. The visual essays offer a vehicle for attempting to figure a few key ideas. The adopted visual language promotes an experiential practice space where I can, in the flow of designing, examine how I act out my designerly knowing.

As a practitioner-researcher, the visual essays presented a useful form for closely examining how I design, while allowing me to intentionally elicit multiple interpretations of the design experience being visualised. This was a deliberate strategy for initiating a discussion with the audience about design praxis. Not interested in rationalising or prescribing the design process, the visual essays aim to open up a space for critical reflection and debate, moving the researcher and the audience toward a newfound understanding of design. The visual essays come to focus on potential over outcomes: they survey the unfamiliar rather than communicate what is already known, and invite alternative interpretations that challenge the perspectives people hold.

As a communication design strategy, this approach calls for active self-reflection and speculative interpretation from designing through to dissemination. Thinking as much from an educator's perspective as from a designer's, I see the role of the visual essays as facilitating learning environments that will be conducive to the sorts of teaching and learning a designer experiences when in reflective-conversation-with-the-situation. In this way, the visual essays provide a space for learning through critiques, research presentations and publishing, by which the designer-researcher and his or her audience can engage in reciprocal reflection-in-action to assess and re-evaluate their base understandings of design (Schön 1992, p136). In this way, the research experience is designed to help the researcher and his or her audience discover how they already see things and to confront them with surprises that trigger new observations and the motivation to share their insights.
Visualisation Study #1:
Curricular studies

The first series of visualisations introduces a chronological sequence of diagrams and charts that assess, speculate and communicate ideas for future curriculum initiatives.

The initial diagrams in the series represent my first foray, in a professional context, to visually exploring ideas I was wrestling with pedagogically. They were private diagrams not intended to be shared with others; I simply valued how they helped me think through and compare competing ideas. However, I quickly found myself tentatively sharing them with immediate colleagues. The utility of the diagrams seemed to lie in being able to explore ideas by putting propositions out into the world that were too complex or political to write up. The series documents curricular ideas developed over a period of years, therefore illustrating how once the ideas became more fixed, the diagrams became more like conventional information design.
BFA Review

SOCIO-SPATIAL ENVIRONMENT
Studio & Resourcing Issues

CURRICULA OPPORTUNITIES
Framed by Content & Structural Issues

PEDAGOGICAL ORIENTATION

Alternative Structural Points

Practice Context
Designing Futures
Designing Consequences
Designing Context
Designing Objects

22.ParsonsCurriculum

elevation of current degrees as departments structure

elevation of discipline clusters

plan view reveals possible departmental structure with operational centers
Visualisation Study #2: Cultural studies

The second set of visualisations brings together a disparate collection of drawings that sought to initially imagine then promote a more integrated, inquiry-led academic culture for the School.

The series serves to illustrate how over a period of years different visual languages were explored and evaluated – from illustrated photography to cluster diagrams. There is the comparison of a diagram completed in the first week and the same graphic essentially revised many times over as the language became more consistent and the objective of the diagram moved from metaphorical and speculative to a real proposition being communicated. The series also shows a promotional poster that directly appropriates from one of the visual essays. Perhaps most significant is the design process diagram. It considers the value and legitimacy of using design (not just communication design) to negotiate the comprehensive project of imagining a new design school.
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24.ParsonsCulture 5.pdf
Key Opportunity
An adaptive model that would advance best practices in relation to methods and...
OPTION 1 - Research Field Privileged

OPTION 2 - Research Engagement Privileged

OPTION 3 - Research Community Privileged

Key Challenge
For the engagement orientation to have traction and enhance the quality of the research.
Visualisation Study #3:  
Organisational studies

The third and final set of visualisations most explicitly embraces the potential of the proposition diagram, as the graphics seek to speculate and reflect upon possible organizational structures.

The initial diagrams share the modest ambition of simply helping me get my head around the conditions or variables of the situation. The diagrams begin to propose new ways of seeing the institution. In the second phase, there was a level of mindfulness with regard to how I used this speculative space of diagramming. These visualisations, emboldened by the insights from the visual essay research, did not have a brief to communicate what would be, but instead to imagine what could be. As I became more comfortable with the understanding that these diagrams did not have to fix, but to propose, the more wildly speculative they became. The thoroughly considered and consultative process of developing this last sequence of diagrams further asserted how the diagrams were more than a quick-and-dirty sketch in both form and spirit.
ACADEMIC ADMINISTRATION

OADP
- Policy Development Unit
- Student Services
- Faculty Services

Ass. Dean of BFA
Ass. Dean of Grad. Studies
Ass. Dean of BBA & BA

ACADEMIC LEADERSHIP

23.ParsonsStructure 5.pdf

[Conceptual Model for Professoriate: Faculty-led Leadership]
Innovation & Research Hubs

- Materials & the body
- Media, arts & technologies
- Process, strategy & enterprise

{SOC. TECHNOLOGIES}

{DESIGN THINKING}
Multi-disciplinary Curricular

Modelling Worlds | Fashion Campaigns | Experience Design | Fashion Studies

Critical Design

Visual Criticism

SMB
Space, materials & the body

Mat
Media, arts & technology

Sustainability

Urbanism

Entrepreneurship
They came to me hoping I could help them with a proposal they wanted to share with their faculty, an idea they wanted to share and get critiqued. The school structure they wanted to propose was more networked than hierarchical and they thought one of my dynamic diagrams would be better than a static organisational chart. It was too difficult to explain with words, so we sketched it out together then I went away to represent the structure for them. But as soon as I started designing, the diagram kept interrupting and asking questions.

This was unexplored territory for all of us, but I tried to address what I didn’t know – I’d colour code people or draw dotted report lines trying to think through what this would mean in reality. With each tentative move, yet decisive mark, a different scenario was proposed. In the end it wasn’t the final representation of the model that was so interesting but the various iterations that helped us to collectively interrogate what the faculty needed to know and what was still up for negotiation.
Visualisation Studies

The visualisation studies documented for this project represent a sample of the diagrams, charts and maps I have designed over a five-year period in my role as the Dean of Academic Initiatives at an independent urban design school going through a radical rethinking of its mission. The diagrams embody the institution’s interest in recognising and enacting the meta-agency of design in the process of redefining the future of design education. For the purposes of this dissertation, a select number of visualisations have been curated into three studies that respectively explore institutional change: curricular, cultural and organisational.

Everyday professional practice includes many conventional diagrams, but for this case study the research ‘project’ work has been edited to single out the speculatively reflective visualisations, as they are the diagrams most directly in conversation with the visual essays. Specifically, these are the visualisations that deploy the proposition diagram and shape my understanding of the nature and practice of ‘figuring’.

By using diagrams in this applied workspace, the act of visualising sought to support the following objectives. First, for the designer to be able to critically imagine, through visually speculating and proposing, possible futures for the design school. Second, to provide an accessible platform for sharing material propositions of verbal discussions with colleagues for critique and evaluation. This is a distinctly different social transaction from emailing a white paper around for review and comment. And third, to cultivate a design-led environment where the predominantly practice-based community can engage in the discursive process of designing by speculating upon the potential disclosed by the diagrams-in-conversation-with-the-situation.

2.3
New Understandings of Practice

Intuitively I recognise that the process of designing the visualisations is a productively challenging experience, therefore I have sought to better understand how and why the design process deepens my own enquiry and animates my conversations with my peers. I believe that if I can make more explicit the elements of my design experience, then I can offer other design practitioners who are interested in research a potential way to recreate a similar level of reflection.
In analysing how the visual language works, I have focused on how the disrupted process of designing a proposition diagram heightens the critico-discursive potential of creative practice (Rosenberg 2006). Or, to be more straightforward, my analysis proposes that the process of designing a proposition diagram offers a design-led strategy for framing a critical practice-led discussion. With this newfound understanding of the creative process I am able to consider the potential of manipulating the centrifugal/centripetal tension to create a similarly propositional approach to reflecting on practice. These insights have led to the emergence of ‘figuring’ as a visualisation practice and the central role negotiating plays in facilitating the reflective conversation of designing.

*Fig. 8 (p132)*
THE PUSH AND PULL OF CREATIVE PRACTICE

Productive, Creative Tension

Representing the centrifugal/centripetal tension of creative practice this diagram captures the push/pull dynamic that is at the heart of designing. The exploratory dotted lines represent the speculative push of designing, the impulse to explore new ways of seeing. The vortex of concentric circles references the countering pull, the impulse to frame and make sense of the design (or research) situation in relation to what is fixed or already known.
I wasn’t looking for hard evidence; I was just curious to see how someone might interpret a visual essay with no context setting from me. Every other day at work I got to observe how people read the proposition diagrams, but I wanted to see if, asked directly, someone might just find the visual essays confoundingly ambiguous or simply inaccessible. I gave my friend a copy of the last visual essay to consume, and left the room. Five minutes later I came back to hear her interpretation. It was a humbling experience.

She confidently began by talking about an architecture studio course she’d done and was relating the dots to people and density mapping. Her initial comments were so off track I felt that the openness had failed to meaningfully establish any connections between her ideas and mine. I was despondent. And yet… as she talked, her perspective shifted to an interior space and she began to read between the two pages, describing how the two “states” have to ultimately weave together. The more she said, her ideas not only began to reflect my own, but her comments also made me think of ideas I had glimpsed but not grasped while designing. I was drawn to how her vocabulary and way of seeing were influenced by her architectural practice. In this way, new metaphors for describing design thinking surfaced and with the fuzzy visual language affecting our verbal conversation new ideas were developed. Still… it wasn’t perfect. She didn’t reflect on what the content of the essay might mean for her practice. She didn’t even seem interested in how another person might read it. Next time I’ll have to work on how to frame the question.
To start with, I just had informal feedback from people that included comments like: “I preferred it when it was just a diagram, with no heading”, “I preferred it when it was just a diagram, with no heading”, “I preferred it when it was just a diagram, with no heading”. But this feedback wasn’t very directed. I began asking people for specific comments of what they were thinking when they read the piece. I wasn’t being scientific here, just curious. I’ll explain one reading in detail, because it’s quite useful for reflecting on how to proceed.

I left a friend alone to read the essay and came back in after 5 minutes. She began her interpretation with a description of a personal trigger - what it reminded her of to start with. Seemed quite irrelevant to anything I was thinking about, but I liked that she immediately linked it back to her own experience. She explained observations that had been discussed to her through a project she had worked on and that the images reminded her of that.

Her initial interpretation was determined by reading the scale she saw the “iterative dreaming” page as representations of people and how they organise themselves in a city, then conceptually reframing the image to a more intimate scale she began to see it as an interior space. She then saw the “strategic imagining” page as the grid that you begin with, the pricks being possibilities. She interpreted that the two “states” had to ultimately be woven together reminding me of my original intention that the “design thinking” drawing illustrates that the outcome is always determined by the individual.

Observing her process of engaging was also interesting. She said she spent a lot more time studying the images than reading the text. Claiming that for her the words only supported her interpretation rather than directing it. What was interesting was that her ideas were so abstract that they shifted a lot as she began to make sense of the sequence. But I was also bemused that as an exhibition she read the images almost in a way I would not have considered.
2.3.1
The Primary Outcomes

THE PROPOSITION DIAGRAM

The combined visual communication practice that evolves out of the visual essays and visualisation studies uses a representational, diagrammatic visual language appropriated from the aesthetic of mapping and information design. Resonating with the ambitions of this research, the proposition diagram allows the designer to get his or her head around the forces at play, while the act of making a proposition provides a discursive space for the back talk of the reflective conversation with the situation.

In creating the proposition diagram I have developed an intentionally ambiguous visual language aimed at promoting a possibilities-driven approach to critical reflection. This notion of the proposition diagram as an instrument for proposing-to-evaluate is central to the visualising practice of figuring that the research case study advances. Working with the designer’s interest in co-evolution of the solution and problem, as I described in chapter 1.1.2, the drawing creates a future-oriented yet reflective process for the designer to propose into. This design-led approach deploys a designer’s expertise in speculating, by way of proposing solutions, as a strategy for reflecting on the subject of the visualisation. This is made manifest in visual essays I created that propose the nature of the design process or design thinking as a strategy for reflecting upon the sometimes tacit nature of designing. For the visualisation studies, this meant proposing future models for the institution’s curriculum, culture or structure as a way to reflect upon the often provisional, always contingent conditions and opportunities the educational context presents. Both cases build on the designer’s expertise to propose a solution in order to better understand a situation by using the propositional act of designing as a reflective tool.

Relevant to my thesis argument is the observation that the diagram’s utility is related to the visual and cognitive slippage from one drawing style to the next. Normally a practitioner would choose between the possibilities-driven agency of the proposition drawing and the reflective utility of the evaluative diagram. Yet, with the hybrid nature of the proposition diagram, the design experience resists any easy negotiation of the propositional push and reflective pull of creative practice.

Fig. 9 (p137)
THE PROPOSITION DIAGRAM

Design-oriented Research

This diagram illustrates the oppositional, yet complementary roles at play in the proposition diagram. The diagram promotes a holistic evaluation of the 'brief' that allows the designer to temporarily fix a range of conditions, providing a strategy for assessing what is known. In contrast, the design-oriented act of the proposition drawing affords the designer new ways of seeing a situation, in turn proposing possible solutions as a way to explore the unknown.
As I was designing the poster I thought – this is too easy. I had become so used to designing the proposition diagrams and engaging in the process of struggling to figure out formally and intellectually what I wanted the essays or visualisations to say. I felt complacent designing the poster because I already knew what I wanted to communicate. The poster was for an exhibition and in one image I was attempting to conceptually summarise the outcomes of the case study. I had always considered my visualisations to offer the audience (and myself), a space for contemplation. Yet this was a poster and I had to be honest that most people would engage with it for less than a minute. I downplayed the discursive nature of the artefact and designed it for quick consumption. The process of designing the poster was familiar and reminded me of conventional graphic design. Still, I missed the gritty engagement of the proposition diagram.

When figuring a proposition diagram I often felt at sea, as though trying to find my way back to solid ground. I would feel I was conceptually (and perpetually) wrestling with multiple possible scenarios, while feeling the formal language was demanding me to be more decisive. With every move I would want to keep open the potential of what was almost within grasp, at the same time hoping that the next move would allow me to see more clearly what I didn’t know. I would sigh aloud, shake my head and then try and come at the questions the design was asking me from a different perspective. I was challenged, I was frustrated, but I was learning. This was figuring, and this is the experience I was missing.
the discursive agency of purposeful ambiguity
The Speculation-led Reflective Practice of Figuring

This research posits that the measure of a model for critical engagement by a designer-researcher is whether it promotes a more intense observation and concrete reflection. Considering the research audience, my goal is to avoid theoretical frameworks or qualitative methods that might be counter-intuitive to the opportunistic designer. Thus, my interest in heightening the creative tension identified in the proposition diagram is motivated by the hunch that designers who are more naturally predisposed to proposing an idea than to thoughtful reflection-on-action may respond to this design-led approach. In chapter 1.1.2 I recognise that designers do not automatically stop to think about their actions over the course of a project. Moreover, routine reflection-in-action is more likely to be concerned with evaluating the ‘appropriateness’ of a proposed solution concept or reflecting on what has been learnt from previous experiences (Schön 1987). However, recognising that designers are motivated by challenges, opportunities and possibilities (Krippendorf 2007), I am also interested in the relevance of inviting reflection by way of imagining potential solutions.

I have come to refer to reflection inflected with the designer’s impulse to speculate as ‘speculation-led reflection’. If speculate, as a synonym for reflect, can be defined as the capacity to think deeply about something, then in using the term I am also alluding to its second definition: to take a risk. In this way, speculation-led reflection can be understood as the designerly act of attempting to figure out and contemplate while also venturing out to playfully explore possibilities. The word ‘reflection’ evokes the centripetal impulse to make connections back to what we know, with the word ‘speculation’ more akin to the centrifugal desire to explore what we do not (yet) know, or what the dictionary would call conjecture (Random House 1987).

The notion of figuring seeks to exploit this by attempting to make this tension explicit. Essentially, the act of figuring seeks to maintain a state of becoming by extending the process of negotiating the push and pull these opposing forces provoke. This concept of becoming is further elaborated upon in chapter 4.3. As a practice, figuring calls for disturbing the already fragile balance by introducing elements into the process of designing that consciously draw the designer in two directions. If conventionally, in creative practice, the desire to deviate is moderated by the impulse to stabilise, then when a designer is figuring I would propose that this negotiation is intentionally disrupted by a call to wrestle with both impulses in the one move.

Fig. 10 (p141)
This diagram illustrates how the critically reflective process of working on a proposition diagram can still be driven by the designerly impulse to speculate. The proposition diagram seeks to reconcile the opportunistic exploration of content still under consideration, with the need to critically examine the ideas that emerge. The centripetal pull of reflection harnesses design-led speculation, in turn allowing the integrity of the ideas to be examined.
I had been working on this visual essay by myself for a few days. And I was struggling. As an essayist I wrestled with the desire to offer an explicit diagram about the design process, while recognising that there was no one model. As a practitioner-researcher I was challenged by materially and visually attempting to capture the ideas my co-author and I were exploring in a written paper, while simultaneously trying to understand exactly what our position was. I felt a need to think through what I was trying to represent, while believing that it would only be through making a move that the design conversation could really begin. At every turn I was being pulled in two directions - to explore and to explain. Still, I was sitting in front of the computer with my co-author critiquing the latest iteration of the diagram and it was clear that the tentative, yet detailed marks I had made were provocative if nothing else. Usually, as a designer I would fake an answer if someone asked what I had intended to communicate with a particular gesture. Yet, somewhere in the space between my lack of certainty about what I was proposing and my collaborators’ propensity to put forth an interpretation, we were having a great conversation about what the background grid could represent.

The ambiguity was requiring us to critically reflect upon the extent to which the grid might map a methodical strategic approach to designing or whether the crosses simply represented points of intersection where the identified strategies stopped to evaluate the situation. The open-ended nature of negotiating these different interpretations not only led to refined iterations of the essay, just as a conventional critique would, but they also offered me a more explicit understanding of how I envisaged the process of designing.
Negotiating the Space between Speculation and Reflection

Over the course of the research case study, visualising has come to represent a way of thinking with and through design – a generative space that is in a constant, recursive process of proposition and reflection. In addition to putting forth a new role for me and potentially other communication designers, this insight has led to a newfound appreciation for the negotiative nature of design practice. Even though theorists have credited designing as an act of “making continual adjustment and attunement…through the continual process of positing possibilities” (Dilnot 2004, p10), I have previously conceived of the negotiating-to-disclose-potential as having a limited function. The conversation between the theoretical discourse and my practice allowed me to more fully understand the capacity of design to negotiate the needs of the subject, the limits of the possible and transformative action (p11). Locating this insight in design literature, I was further able to perceive how central the idea of negotiation/mediation is to identifying the contribution of design for navigating the incommensurable.

The elusive design praxis subject of the visual essays and the dynamic institutional change subject of the visualisation studies require me as the designer-researcher to navigate unfamiliar territory. This positions the visualisations as a collective space for learning, the protracted space for reflection coming from the designer giving form to the not-yet-known material of the exploratory visualisation. In this way, the reflection-on-action of the proposition diagram has the potential to illuminate the designer’s tacitly understood ability to negotiate the space between reflection and speculation. In understanding a designer’s expertise to propose-a-solution-to-evaluate-a-situation, it becomes possible to consider how this might offer a strategy for driving the in-depth reflection of the practitioner-researcher.

In addition to the internal negotiation of designing, there is also the potential for inviting the research audience into the process of interpreting the visualisations for themselves. The insights into the process of figuring, revealed by the reflection-on-action, help me to see the democratic learning space the visualisations offer. This is because the emphasis on being unsettled is often about intentionally avoiding conclusions. This desire to not fix what the visualisations are communicating keeps open the possibility of different interpretations, so that through discussion the potential of unforeseen perspectives can be proposed and critiqued. The cognitive value of the visualisations is therefore wedded to their capacity to engage the audience to negotiate their own understanding of the visual essay’s subject or the visualisation’s academic proposition.

\textit{Fig. 11 (p145)}
The PhD acknowledges the dual forces that motivate a design-oriented research practice of designing, writing and framing. The case study highlights that by understanding ‘negotiating’ as a critical part of the design process a strategy is presented for deepening a practitioner-researcher’s reflection. In manipulating these dualities the project proposes a methodological approach where research interventions are introduced to draw out the negotiations.
I had just finished a PhD presentation where I reflected on the noticing-driven/grounded theory strategy that had challenged me to think of my ‘practice’ holistically. Until I had done the exercise I had understood my research to literally be the projects I had framed and proposed as visual essays. A juror jumped in to the discussion to describe how I had to stop ignoring the elephant in the room. He was adamant that the evolution of my professional communication design was key to understanding my research. Feeling like he had missed the point I turned to the other jurors, only to have them nod in confirmation. The material evidence of the pin-up made it hard to ignore the role my workplace visualisation studies had had on my research, yet to acknowledge this was to also challenge my preconceptions of how research should be formally framed and disseminated.

As I listened to a second juror assert that the real relevance of the research lay in the new model of communication design the professional work modelled, I felt simultaneously exhausted and exonerated. I knew that if I were to draw out the insights the jury was repeating back to me, it would mean rethinking my whole thesis argument. But I also could see that the critics were reaffirming my long-held belief that there is much to be learned from everyday professional practice if examined through a critical framework.
I believe
Love is love
Fall at your feet
I miss you on Sundays
Share your love with me
Pet's love
He said, he said, I'd tell you
Blue eyes across a crowded room

Fool About You
Endless Love
Same Day
Crash Girl
Vision of Love
There's got to be a way
That's Okay
2.4 The Reflective Conversations of Practice-led Research

The Practitioner-researcher

This chapter asserts how the case study's practice of figuring repeatedly triggers new understandings of the practice of designing. Figuring, as a form of critical thinking through action, works with a notion of productive disturbance to ultimately deepen the designer-researcher's conversation with the situation. This design-led take on enquiry presents an approach to research whereby practitioners can design their way to discovering new understandings.

The fresh perspectives generated by this design-oriented approach invite new ways of seeing the specific research situation. The consequence is that new perspectives can expose the limitations of one's current base understandings of design. It is a threatening experience to have such core beliefs contested; yet repeated challenges to my perspective have resulted in illuminating new possibilities and potential for practice.

Here I introduce a series of anecdotes to illustrate the different ways that my methodological approach has challenged my preconceptions. These have subsequently led to new perspectives, revealing newfound understandings of design praxis. A text and image narrative focuses on the different ways insights are triggered and new understandings are brought into being. Three of the narratives note the conversations I have had as a designer creating work; the other three document my reflections as a practitioner-researcher in conversation with the broader research project. The narrative is loosely in chronological order and yet many of the ideas first emerged as small insights, only over time coming to be recognised as observations worthy of attention. The narrative thread attempts to isolate the small insights that have triggered significant shifts in my perspective, while illustrating the extent to which those insights are interconnected. Together, these reflective conversations and the insights they continue to elicit have had a significant impact on the direction of my research project.
Early on, at a formal review of my PhD, I made my case for why working to the visual literacy of designers meant that visual essays were an appropriate mode for disseminating research. A philosophy critic productively questioned this assumption by pointing out that by my own recounting of the situation, the value of the visual essays appeared to come from critique and discussion. He asserted the role negotiation plays in design and lamented how unaware of this designers appeared to be.
Going into the project I believed that the material/visual contribution of design was key to rethinking the dissemination of design research. In externalising a full account of the process of designing—not just presenting the visual essay—it became apparent that my perspective was blind to the role that verbal negotiation plays in designing. This moment underscores the extent to which I was working from hunches and not really listening to the back talk. As a designer I was more attentive to the conversation with the design and needed to engage more directly in conversation with the broader situation. This limitation has confirmed for me the value of practitioners having a comprehensive understanding of the agency of design. In later presentations when I’ve called out the transactional, negotiated aspect of design thinking, the concept has clearly resonated with practitioners—even if they had previously only tacitly understood this as part of their design expertise. This demonstrates the potential for, and the importance of, recasting the designer’s artefact-oriented understanding of practice.
Keeping it Real

There is another chapter in Underworld that begins with a character watching a home video filmed by a young child who accidentally recorded a homicide. In this case the alluring quality of the image is determined not by its uniqueness (as its endlessly replayed on television and the guy is drawn to watch it every time) but for some more elusive quality attached to the integrity and innocence of the tape. In part this is associated with the formal qualities of the home video “the grain of the image, the sputtering black and white tones” but it is also a reference to how real the image is.

“You think this is more real, truer-to-life than anything around you. The things around you have a rehearsed and layered and cosmetic look. The tape is superreal, or maybe underreal is the way you want to put it and this is another reason why you keep on looking. The tape has a searing realness”

So what does that say about the dissemination artifacts that become as ‘designed’ as the designed artifacts being referencing? Were the earlier Studio projects more real because we didn’t try so hard, or because the projects weren’t so contrived, or simply because we weren’t that polished yet? I think I am making this association between the formal style and the connection with the artefact because I have also just read an article about Craig’s list which makes for an interesting case about the integrity of the company, the sense of community and the graphically un-designed interface.

Posted under Uncategorized | 2 Comments

Preserved or Incomplete

Am reading Underworld by Don DeLillo and he’s writing about a famous home run and the characters are discussing why that home run seems so mythic alongside the hundreds that followed...and this quote got me thinking about retention, engagement and memory:

“The scratchier an old film or an old video tape, the clearer the action in a way. Because its not in competition for our attention along with one thousand other pieces of action. Because its something that is preserved and unique.”

The emphasis here is on the fact that there was only one known audiotape recording of the game but I began wondering whether some of the romance
In the beginning my blog was simply a place to jot down ideas - more a place for critical contemplation than rigorous reflection. The performative yet intimate nature of blogging feels familiar since it reminds me of my decade-long experience of writing a journal and the acculturated studio practice of critiquing work as a designer and educator. Over time I have come to appreciate, and ultimately rely on, the way in which the blog promotes an integrated conversation with the broader situation of my practice and the surrounding discourse. Initially, I wanted to dismiss the increasing number of blog entries as simply procrastination, since it allowed me to keep playing with ideas rather than getting on with making new work. As a designer I appreciated that the insights revealed by trying to write down my tacit understandings of practice served to improve the next iteration of visualisations. Yet I defended this to myself by casting the act of blogging as being as speculative as designing. I still resisted acknowledging the full value of blogging.

The boring part was spending two days gathering together old files with totally archaic file formats etc.

What do we know about designing?

When I began the defining posts, I previously made the claim that:

I less think that I am generally talking about design knowing and that I am more specifically talking about capturing what we know about designing.
Blogging has provided a comfortable place where I can tentatively theorise, which in turn requires me to find a vocabulary for my ideas. Yet, initially I was as blind to the central role blogging was playing in declaring the agency of the visualisations as I was to the limitations of communication design. This was the first time the research experience challenged me to recognise the limitations of design practice. It proposed a direct threat to my most basic understanding. At that point in the research, my practice-oriented worldview was committed to the dissemination of the research aligning with the visual literacy of the research audience. In acknowledging the role of blogging in my own research, I have had to dismiss an original hunch of this PhD and subsequently rethink the direction of research project. Five years later, the final case study has come to model what this dissertation argues for: respect for the ways that non-design strategies can complement the reflection, translation and communication of the knowing that practitioner-led research proposes.

Lawson’s emphasis on design drawing is informed by these conventions the use of diagrams seems referencing for example mind-map like exercises outline a brief. My diagrams in comparison come of information design, a field with a greater historicalising diagrams that seek to communicate what talks about the danger of diagrams coming from within certain rules, he hints at one of the problems. Faux-Information Design post speaks to the problems visual language of my diagrams by the convention. Lawson makes a similar point when he highlights diagram that inappropriately aspires to present a diagram works within a consistent approach to expressing his concern for diagrams that deploy a rationale. This is similar to his point that the visual drawings often directly relates to and communicative proposition is resolved. He argues that the propositional drawing should not misrepresent the extent to which the ideas are only ‘temporarily fixed’ or still under ‘investigation’. In this way he appropriately recognises that the visual form is both a question of how the drawing is presented and what the drawing is communicating. He illustrates this point by talking about how architects use different drawing tools at different stages of proposition, where the graphic language mirrors the level of precision the architect feels about the idea.

To this end I think Lawson would see that propositional sketches should not deploy the graphic language we associate with the diagram essentially because he ascribes a kind of authority to the diagram itself. In this way Lawson, like Tuft, confers upon the diagram an objective representation of content. So for Lawson, I believe, the tension of a propositional diagram would lie with the fact that he sees the ambitions of the two drawings as inherently different. Lawson would seek to minimize the confusion of one reading the still open-ended nature of a propositional sketch as a diagram’s assessment of a problem or the resolution of a solution. I am wondering what I think of his cautionary assessment?

I recognise the problem others have with me essentially using diagram-like drawing conventions to explore ideas that are in Lawson’s language only temporarily fixed. But at this point I am questioning the extent to which it is productive for me to work like this. The earlier collaged images I created were
Discipline Responsive Programs and Structure
When sharing early iterations of how we might rethink the school curriculum with other design educators, I was struck by how little my colleagues tried to read what I had intended the diagram to say, immediately beginning to offer their own interpretations. My frustration quickly diminished when I became engaged by the opportunistic potential proposed by their misinterpretations and the subsequent speculations that the discussion provoked.

Key Challenge
The large number of faculty projects that won’t fall under the prioritized fields
In the beginning this was just an initial insight triggered by a professional experience. Yet as I have consciously explored the idea further in the visual essays, I am challenged to reconsider my implicit understanding of the function of diagrams. I have stopped assuming that the intended meaning of a diagram is the most important one. Presented with this newfound perspective, I can recognise the productive potential of designing ambiguous communication that intentionally elicits readings alternative to my own. The possibilities this new perspective represents have liberated me from the limitation of communicating a fixed position. Learning from the arts, my perspective has shifted from thinking in terms of ‘communication’ to embracing ‘interpretation’. And, in embracing multiple readings, a new central role for the audience is defined.
When designing the third visual essay on design thinking, I became aware of the increased mental focus it required compared to my regular design work. The design challenge stems from processing how a theorist’s philosophical writings might be visually translated to align with my experiential understanding of designing. I tacitly understood the writer’s position, but at times my understanding seemed beyond not just explication but also visual representation. Trying to move away from expressionistic mark-making toward the diagram, I have recognised the purchase of a visual language that has allowed me to deepen my interrogation by temporarily fixing a position.
This insight challenges the assumption that I need to 'know' what I am communicating before I begin designing - which presents the possibility that I can learn through designing. My new perception allows me to value the designer’s speculative move as a valid strategy for reflecting upon and interrogating the unknown as an end in itself - not just a tool for preliminary states of designing. This in turn promotes the value and validity of designer-researchers deploying the process of designing as an inquisitive method for researching unfamiliar terrain. This shift in perspective proposes that designing can intentionally manipulate a speculative approach to exploring the unfamiliar, in turn sparking the possibility of a speculation-led approach to reflecting. Specifically, this understanding discloses the potential of visualising for tentatively communicating a practitioner’s previously tacit knowing.
I came to this research exercise half-heartedly. Although I gathered together all the material I associated with my practice over the past years, I was still sceptical that half the printouts in my hands would be relevant for an exercise firmly about my research. My first pass at sorting the work simply served to code the material as I already perceived it: I placed the visual essays in one column and the professional practice and teaching material away from the essays that I understood as being my ‘research’. The next pass paid more attention to all the diagrams I had done for research presentations – diagrams that looked undeniably similar to the diagrams I had done as part of my professional practice. Already lines were being blurred. By the third pass, I invested more in the process itself and consciously tried to let go of my preconceptions. By the fourth pass I had not only come to literally ‘see’ the connections between the research visual essays and the not-yet-recognised professional visualisation studies, but I had also come to love the exercise.
Grounded theory refers to a research methodology by which a researcher can frame and reframe his or her 'data' until a theory begins to emerge that makes sense of the material being investigated. This exercise, which integrates techniques behind grounded theory and the discipline of noticing, was designed to ensure that my interpretations of the research were grounded in practice – and the 'findings' seemed to suggest I had been unable to see the bigger picture. Interestingly, even though the exercise led to a complete reframing of my research project, this was not because it challenged my base understandings but rather because it allowed me to critically see the project from another perspective. By now I had already come to appreciate that design can learn from other reflective methods of enquiry and I had become comfortable with exercises contesting my orientation. The groundwork preceding this exercise granted me the openness to push to the side my earlier assumptions and examine closely the new ways of seeing presented. As a consequence I have a richer appreciation of what practitioner-researchers can gain from adapting methods from other fields.
Tim has always made the point that an anthropologist may have a keen, developed visual literacy, but that it would be very different to that of a photographer. What has become increasingly pronounced is the specific visual literacies amongst art and design fields; just how different a photographer is to an architect to a communication designer.

Jamer and I have been in the process of developing a presentation for Faculty that sought to often visually chart how the graduate programs may sit in relation to each other or how the course structure may be constructed. In the process of sharing this material with people we have received conflicting feedback about the visual content. Some people immediately responded positively to the charts, unphased by the initial complexity of the content and recognizing that if they took the time that the visual language would explain itself. Others were immediately confounded by not knowing the code, legend or simply the order by which they were supposed to privilege content. To this end Jamer and I found attempted to simplify the visual content to only have exposed that the simplistic material then raised too many questions.

My initial response was to ungenerously perceive that some people just had really limited visual capacity but then it became apparent how consistent the critiques were with certain fields of design. Communication designers, in their comfort zone, could offer a critique that was often a refinement of the work, questioning the organization or hierarchy of the content and how to refine the adopted visual language information. In contrast the architects seemed most challenged by how to even engage with content that was layered in different...
I have tacitly recognised that the visualisations created at work are related to my PhD. The problem is that I explicitly understand the visual essays to be about visualising design knowing, and that has nothing to do with my day job. Still, I find myself, yet again, observing my colleagues’ reactions as they engage with the diagrams. This is the fourth time we have done this presentation and even though all the other meetings have been successful, it is obvious that this presentation, to the history and theory faculty, is not going so well. The anecdotal feedback I get from this meeting is distinctly different than from my studio-based colleagues. Whereas the design faculty embrace the openness of the diagrams, the humanities faculty admonish the opacity of the diagrams. And even though I call it a ‘research blog,’ I once again find myself reflecting on a professional encounter – this time considering the nuanced ways different disciplines might engage with the ambiguity embedded within the diagrams.
In the end my interpretation of the purchase of the visual language I am developing has largely been formed in conversation with my professional practice — not the practice space I originally understood to be my research practice. I believe this is because the workplace visualisations, unlike the visual essays, are presented in context. The public sharing of the work achieves a real-world, situated reading of the pitfalls and purchase of figuring as an approach to business communication. The human interactions of the applied practice space draw attention to a different kind of reflective chatter than the academic writing I have done in relation to the visual essays. Once I came to explicitly understand the two practices as equally relevant, I have also come to see how the deep reflection of the visual essays’ research practice complement the critical observations and prolific generation of work undertaken in the professional practice space.
Chapter Summary

Chapman, upon completing a practice-based PhD underscores the importance of making and the role of the artefact:

The intellectual strategy for “discovery” in the creative arts appears to be one in which material is brought forward for analysis, discussion and reflection, through making, rather than through observation or reason. Indeed this is perhaps what gives it its cultural significance… Artefacts are not merely central in terms of outcomes, they are central to the very realisation of outcomes (Scrivener 2004, n.pag).

The design-oriented approach of this PhD does not refute Chapman’s insight, but focuses on the supporting strategies required to perform the analysis, discussion and reflection Chapman references. As an example the act of narrating the reflective conversations of the practitioner-researcher is used to underscore how instrumental a simple shift in perspective was for my research. These conversations illustrate that research is often determined by the granular, reflective moments sparked by a comment from a critic, a reflective conversation through blogging, or an audience member’s critique. These discursive interventions – which can happen on a variety of levels in response to a range of activities – make visible possibilities and limitations that might otherwise go unrecognised.

In evaluating the potential of an approach to research, it becomes critical to acknowledge the need for discursive spaces and reflective strategies that facilitate this deep level of engaged noticing.

The case study puts forth a model of how a graphic designer can visually explore aspects of design praxis (the visual essays) and the utility of designing for exploring new ideas (the visualisation studies). My reflective conversation with the research situation of the case study presents practice observations and insights that can be translated into a workable understanding of figuring. The experience of designing and sharing the diagrams reveals their implicit value, but the layers of reflective conversations with the audience and the research situation have led me to question how I design and how others engage with the visualisations.
CHAPTER THREE—
The Discussion
CHAPTER THREE—
The Discussion

This chapter details the methods that drive the research. If chapter two focused on the ‘action’ component then this chapter narrates the ‘research’ component by introducing the critical framework that links the various reflective strategies. These research interventions into the design-led orientation of the visualisation projects play a key role in structuring the reflection, on and in practice (Schön 1983).

Scrivener describes how “each institution’s approach to practice-based research is in essence an experiment and both the advocates and participants in the experiment need to engage critically and reflectively with all of its aspects” (2004 n.pag, my emphasis). Addressing the need for the design community to be investigating the potential and pitfalls of research through practice, this chapter undertakes two levels of reflection. The first level accounts for how the case study was undertaken – by auditing and reviewing the research methods. This narrative assesses the utility of different tactics for disclosing new ideas about design praxis. Mindful of how the reflective strategies complement the process of designing, the first sections examine what these methods do. Taking the reflection up a level, the chapter moves to questioning not simply what the strategies do but what they achieve. The first level of reflection discloses the extent to which the multiplicity of perspectives is constructive, the second level proposes why the kaleidoscopic multiple method approach works for the designer-researcher. Linking the importance of design as a negotiative act to Schön’s notion of back talk, the chapter concludes by contemplating the potential of research tactics to amplify the reflective chatter of design research.

In evaluating the research methods adopted, the assessment is always anchored by consideration for the audience. This leads to a modification of specific approaches to engage directly with the visual/material expertise of the designer. In addition an evaluation of research methods strives to consider how the overall research program can support the co-evolution of the research problem and proposition as a consequence of engaging in a material conversation with the research situation (Schön 1983). This bias toward engaging the design educator interested in practice-led research draws attention to the motivation behind the third key research question: which research tactics and strategies might encourage a practitioner to more deeply reflect on and share his or her tacit understandings of design?
I was stuck. I knew that I had to begin my penultimate presentation with a clear, decisive framing of what I understood the conceptual framework for the research project to be. But every time I tried to fix it as one thing, I wanted to counter that it was also about something else. In my blog I would regularly find myself describing the point of some post as ‘the core’ of my research, or ‘the foundation’, or what the research was ‘ultimately’ about … the problem was that the central tenet of the thesis was always in flux. This reminded me of how, in casual conversation, I would find myself offering different one-sentence pitches of what my research was about – depending on whether the person was a designer, an educator or a communication designer.

For the presentation I focused on the idea of multiple lenses. This led me to conceptually frame the experience of researching as being like playing with a kaleidoscope, with me forever seduced into changing the topic with every subtle shift in thinking. Still. Later I remembered a novel I had read that was completely written up as first chapters. What I recalled was how instead of feeling confused, the multiple ways into the narrative provided a richer understanding of the woman’s life than if her story had only been told from one point of view.
Practice or Project?

Following up from the GRC presentation I want to go back over the terrain of how I situate my work in relation to the research projects and my Parsons practice. Last month I wrote about how Cameron had corrected my description of my research by asserting that it was practice-led rather than project-based. At that stage I understood his point to specifically be that I had to consider all of my practice when talking about my research that made sense. Going into the grounded theory exercise I had acknowledged that I should include much of my Parsons and Australian practice work, but I struggled with really making sense of how to prioritize all this work in relation to the more focused, discrete research projects. But after presenting my work last week this issue only seems more central to resolve.

At the review last week it became clear that Anne and Cameron were both discussing my Parsons work as if the primary contribution of my research could be mined from that practice. I hadn’t seen it like that at all! I had valued the dialogic relationship between the research projects and the everyday practice, but wouldn’t have sought to emphasize how my design practice has changed from Studio Anybody to Parsons as some kind of trajectory mediated by my research practice. Never. And it isn’t because I disagree... just that I hadn’t really seen the practice as addressing many of the concerns the research sought to engage with.

To a case in point. Anne highlighted that where the research made a significant contribution to the practice of design was in calling for a different kind of engagement by the designer. Not the designer who makes a final product but a
3.1 The Multi-faceted Profile of Design-oriented Research

This research project has led me to recognise the value of practice-led research to understanding and refining my own professional mastery. On multiple occasions, I have noticed the influence of this communication design research on my studio practice and my teaching. Yet, for reasons already mentioned in the research rationale I chose to use the grounded communication design projects as the means-to-an-end for exploring the potential of practitioner-led research. Even though this research engaged in the broader domain of design, the practice-led approach ensured that it directly influenced my practice as an academic administrator and researcher. However, the objective of this research requires that I consider the research beyond the influence it has on my own practice and challenges me to interpret the research experience in a way that might inform others understandings of design practice.

As a practitioner, I have been reflecting on the design process involved in the case study, while additionally reflecting on how I am thinking and acting as a researcher. This calls for micro-reflection on what the case study discloses about the process and practice of design, and macro-reflection on how the research approach facilitates broader insights about design research itself. In order to engage in these multiple tiers of reflective activity I needed to both maximise my reflective designer skills and also introduce new analytic tools.

The design experience is one that, for many, is already concerned with multiple readings, multiple possibilities and holding multiple ideas at once. Embracing the multiplicity of design practice, I have developed a research program that supports multiple practice spaces, research methods and modes for communicating the research. This chapter discusses why all these elements are key to the model of design-oriented research embodied in the case study.

3.1.1 Multiple Phases and Multiple Methods

The case study reveals that the negotiations of creative practice can be amplified to create a more discursive space for reflection. This new understanding highlights the value of the propositional act of designing being in
constant conversation with the more explicitly contemplative act of writing or verbalising. Even though the visualisations of the case study work with a range of design-based strategies to heighten the interrogative agency of designing (namely, the proposition diagram and the practice of figuring) a more extensive toolkit of exercises is required if the case study insights are to advance more than my own understandings of design practice.

Returning to the four-part research cycle of propose > make > discuss > reflect, it becomes possible to quickly evaluate at what phase in this cycle research insights emerge. The case study can be characterised by the following research cycle: proposing a multi-faceted research program; making visualisations across diverse contexts; engaging peers to discuss the relevance of the insights; then reflecting on what this means for the research project and the next design move. It is worth noting that many of the new understandings that emerged did so during the ‘discuss’ and ‘reflect’ phases of this cycle. Yet that is in part simply because they point to the more discretely discursive phases of the research experience. The cyclical nature of returning to propose and make more visualisations underscores that the situated design experience will always play a critical role in informing research outcomes. In this way, the design artefacts are always in conversation with and often frame the discursive acts.

Given these different phases of research activity, a range of research strategies are required. I have referred throughout this dissertation to the multiple-method approach of the research, in part because I began as such an advocate for a very design-biased approach. But for all the obviously new methods tried – for example, the grounded theory – it has also been a revelation to closely examine the design experience and recognise how everyday practitioner activities such as presenting and critiquing design work present highly discursive spaces for sharing and corroborating new observations.

Yet through the research experience I also came to recognise the value of stepping outside my comfort zone and working with methods that seemed at times to draw on expertise antithetical to my own. Given that my disaffection for academic writing and reading influenced my initial interest in liberating the practitioner-researcher from writing, it has been important to find a way to not suffer through the whole experience of writing the research papers and the dissertation. However, by perceiving writing as a potentially discursive, open-ended and propositional practice has allowed me to find a way into writing.

The diagram below emerged from a noticing-driven visual exercise where I deployed the coding practices of grounded theory research to classify the activities undertaken in support of the PhD in a variety of ways. The different ways of grouping and visualising the activities informed the
discussion in this chapter. This includes more than just the primary methods; it provides a list of everyday activities that would otherwise go unseen, such as supervisory conversations and design critiques. This particular diagram revealed the rhythm of the PhD over the period of eight years.

*Grounded Diagram I: fig. 12 (p179)*

### 3.1.2 Multiple Frames and Multiple Perspectives

Working across and between multiple research activities calls for a researcher to embrace the challenge of repeatedly seeing the work anew. This negotiation of various modes of inquiry is perhaps most evident in the case study when conceiving of how to present the work to others for critique. The deliberative act of designing hybrid text/image artefacts to communicate the research with others underscored the extent to which the various multiple approaches were essentially about framing multiple perspectives. This suggests that in adopting a multi-modal approach for the research presentations a practitioner-researcher can productively generate new ways to reflect upon his or her research – and offer different ways into the research for the audience.

Designers tend to consider a ‘problem’ from the perspective that there is no single answer – only possible solutions. To this end, designers use their evaluations of a design proposition as a strategy for opening up the design situation. The cognitive expertise required to evaluate these possible solutions calls for the designer to be skilled at holding in his or her mind multiple considerations of the situation (a range of contingencies, potential ideas, practical constraints, et cetera). This propensity to continue to put forward alternative propositions is an essential part of how the designer negotiates the process of reconciling the material, aesthetic, functional, social and/or economic conditions a design situation presents (Cross 2009, Lawson 2004). The point being made here is about the designer’s comfort with tackling a research project from multiple angles.

The designer’s capacity to iteratively search for the right way to frame a project is a valuable skill to bring to researching when the subject is as unquantifiable as design praxis. Design-based methods provide a critical platform by which to reflect upon the subject at hand, but it is the designer’s ability to exhaustively frame and reframe the design problem that allows for a comprehensive understanding of the design situation to emerge. It is not simply a question of oscillating between writing and designing that
RESEARCH PHASES

This diagram patterns the internal cycles of the research and the overall phases of the PhD. The internal rhythm shows the pattern of proposing and making through designing and then discussing and reflecting through the research presentations and writing. The clusters of PhD activities (orange) appear regularly throughout the research program. In contrast the research-led visual essay activities are more intense in the early years of the PhD and the professionally-framed visualisation studies only begin two years into the program.
provokes new insights; it is the private iteration of rewrites and work-in-progress designs that allow a practitioner-researcher to consider his or her topic from multiple fronts. Ultimately, the exercise of coming at a design project, a conference paper or a research topic from various angles allows for new ways of seeing the design or research situation. My research experience suggests that it is the process of using multiple frames that leads me to clarify my own base understandings of design praxis. If a designer is already comfortable with recasting how he or she sees a design situation, then perhaps it is also easier to accept a new interpretation of a visualisation or to shift his or her perspective on design within the research process.

The following diagram, the second to emerge from the grounded theory exercise of examining the research activities, highlights the different practice spaces and the pattern of designing, writing and framing activities. This visualisation of the activities shows how the visual essays and visualisation studies are supported by different activities, and yet both rely on the critical framework constructed by the institution. This diagram also reveals the parallel activities undertaken in my academic role that have given me further pause to reflect and frame the potential of design research.

*Grounded Diagram II: fig. 13 (p181)*
This highlights the different research activities deployed by the practice spaces. Designing and writing play equal parts in the visual essays research practice space (blue). Designing and observing audience interactions are dominant activities of the applied visualisation studies practice space (grey). The PhD activities (orange) are primarily motivated to: frame the practice insights in the research presentations, reflect upon the research situation in the blog and write up the dissertation. All activities set in italics are associated with my professional practice.
3.2 Speculation, Reflection and the Process of Negotiation

THE RESEARCH INTERVENTIONS OF DESIGN-ORIENTED RESEARCH

In chapter 1.5.1 I outline three categories of research activity – designing, framing and writing – and chapter 2.5 touches on why my research program draws on a range of different research activities to ensure the research topic is explored from multiple perspectives. This section more closely examines these categories of research, identifying the individual contribution each presents for interrogating design practice.

For a research project to commit to a design-oriented approach, it is important that: the questions emerge from practice; the practitioner-educator is understood to be the primary audience; and the theoretical positions are always informed by design experiences. Complementing this privileging of design, reflection-based strategies also play a critical role in helping the researcher to generate interpretations of the design experience. Findeli underscores the necessary step in project-grounded research to step back from the practice experience “in order to carry out the ‘conversational’ activity necessary both for validation and communication” (1999, p111).

The grounded theory diagrams of this chapter illustrate the potential designing can play in even this late phase of interpreting and making sense of the research. Yet, even though this research values the integration of several modes in the one activity (such as diagram that includes a short text, or the visual/verbal interaction of a presentation), I found it constructive to somewhat artificially distinguish between the reflection-based exercises and the design projects. This conceptual framework allowed me to recognise that, in part, it was the conversation between the framing and writing exercises and my design work that differentiates this research from the professional practice of a reflective designer.

This section documents how a research program can amplify the creative tension between the performative and qualitative approaches to enquir. The designing-based activities allow for a propositional, possibilities-driven approach to exploring a research topic and noticing insights that may resonate with other practitioners. The writing-based methods call for an explicit vocabulary and clear analysis by which to articulate and share the practice insights. The framing-based activities deploy multi-modal strategies for negotiating the conceptual frame by which the insights could be presented to invite discussion. Together, these three approaches promote a creative and rigorous process for research.
I have to concede that my research blog was the single most instrumentally valuable research tool I discovered as a practitioner-researcher. I say this reluctantly because this research began with an uncritical standoff between the value of images in contrast to the written word. My key argument lay in the conviction that the visual literacy of the design educator ensured that the visual dissemination of research would resonate with the research audience. My blind spot with respect to writing had not allowed me to think about what I might get from the experience of having to write about my research. Still, I found myself turning to my blog more and more, and not simply as a place to upload precedents or jot down ideas to explore in my practice. With the back talk from the studio-practice becoming more pronounced and the research ideas more complex, I needed a focused place where I could still my ideas. I needed a place devoid of the seductive, possibilities-driven distraction of design practice.

In many ways, blogging worked because it presented a designerly practice of writing that seemed unlike my experiences with formal academic writing. The blog was somewhere I could speculatively propose into the virtual space of writing, to critically and intuitively reflect on the ideas I was working through. This speculation-led approach to reflection seemed familiar because it felt like a written practice of figuring.
Title time again

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Seems funny but predictable that every year or so I have to reconsider the title of my PhD. It is like some kind of limbus test to look back over the previous one and realize in what ways the emphasis of the research project has changed. I like that this is the way it is. It would depress me somewhat to see the project as fixed, so I appreciate the contingent nature of the project itself and consequently it's title.

So here goes.

Last time I did this exercise my focus was clearly signaling the move from dissemination to more broadly engaging with and provoking design discourse. I also was going through a phase of highlighting the thinking behind visualizing, rather than the form of the visualizations themselves. These parts still hold true. What I think has shifted is the topic has shifted away from knowing/knowledge being the subject matter and has become more defined with respect to discourse. Whereas before I broadly proposed titles like: "The agency of visual communication strategies in promoting a designerly engagement with design knowing, design practice and design discourse", I think I now need to be more specific.

I think the title should signal the importance of visual essays, designerly discourse and visualizing the invisible to the research.

+ Visualizing the Invisible: the discursive agency of visual essays that give form to a reflective conversation of designing
3.2.1  
Designing, Writing, Framing

For this design-oriented approach to research, the conversations between the design and writing exercises are central. The design-inflected action research cycle ensures that all the research activities are regularly in conversation with each other. This is distinctly different from research approaches that frame a theoretical position first and then produce design work in response, or undertake the design work and then write up an exegesis in response. The cyclical interactions of the project grant a particular kind of momentum whereby, at the end of each phase, the practitioner is motivated to either make more work in response to the discussion or discuss the work recently made. In this way, the design-oriented approach presented within this research does not simply operate from the middle ground between designing and writing, but from a position where the integrated activities ensure a multi-modal way of framing and refining the thesis.

The following paragraphs extrapolate from my research experience to propose ways in which the interventions of design-oriented research can shape a multi-faceted research program. This framework is based on reflections of my experience. Consistent with this thesis I recognise that other practitioner-researchers are likely to interpret the potential of this case study differently. Yet, as a designer I am compelled to at least put forth a proposal of how a design-oriented research set of methods might be framed – if only so other practitioner-researchers can consider how they might reframe things in relation to their own experience and understandings. Specifically, I propose how the designing, writing, framing approaches serve different research objectives when it comes to insight generation, negotiating discussion, perspective shifting, corroborating the research and forming new understandings of practice.
3.2.1 Designing, Writing, Framing

PROPOSING INTO THE UNKNOWN:
VISUAL ESSAYS AND VISUALISATION STUDIES

The design research projects provided the central activity for topic interrogation. Often the substance of what the research contributes is shaped by the ‘discuss’ and ‘reflect’ phase of the research cycle. Yet, the iterative process of always returning to generate further work is how the design work maintains its ongoing conversation with the researcher and the research audience. Although I continue to recognise design practice as more propositional an activity than framing or writing, my objective is to push it to be a more critically reflective experience than that often afforded by professional practice. My model of design-oriented research proposes the merits of the designer creating a more reflective practice experience by heightening the everyday negotiations of practice. In attending to the granular decisions of each design move, the back talk between the design experience and the designer-researcher will be more apparent and provide the researcher with a way in to noticing the more tacit understandings of practice. Design-oriented research seeks to promote a discursive engagement with the design projects, therefore valuing the researcher producing work in multiple contexts. The potential of working in more than one practice space supports feedback from different audiences and provides comparative contexts by which to evaluate the possibilities and limitations of the designs.
The visual dissemination of design-oriented research presents a design space that is the visual equivalent of dissertation writing. The objective of the dissemination diagram, inserted throughout this document, is to visually represent the key ideas of this thesis. Given that this activity happens late in the research process, it is less exploratory and more focused on explicating the research than furthering the interrogation. However, the process of visually articulating the research outcomes can complement the written exercise, as it provides an alternative mode or perspective by which to clarify the substantive contribution of the research. A distinctly different experience to the crafting of a linear argument, the diagrams call for teasing out a series of key points. The process of designing diagrams that seek to pin down and explain (distinct from the process of a proposition diagram) requires the practitioner-researcher to have a keen understanding of the topic, while productively exposing fissures in the thesis being articulated. The multi-modal negotiation of integrating text and image into the dissemination material can further challenge the researcher to see the thesis from multiple perspectives, while signposting – rather than prescribing – a way for the audience to read the dissemination artefact.
The significance of a research blog depends on how a designer constructs his or her research program. The blog can provide an excellent tool for reconciling activities across multiple practice spaces and directing the insights generated by different research activities. This capacity to survey a whole project supports an ongoing negotiation of the research project’s internal coherence: an essential role when managing a multi-faceted research program. In addition, the sketch-like informality of the space can make the researcher comfortable with beginning to work through ill-formed theoretical propositions by just beginning to write. Akin to imagining a design solution before fully comprehending the situation, a blog entry presents a way to dive in and critique the proposition through the process of writing. Often the speculation-led approach to reflecting will disclose a greater understanding of the provisional insights, even if the experience calls for the researcher to back away from – or opportunistically revise – his or her original proposition. The blog can represent the first move to externally verifying the research observations by listening to the conversations between the designer and the design projects and tentatively proposing how the designer might begin to make concrete the insights disclosed by the projects.
The process and objective of academic writing presents an invaluable method for explicating the ideas that emerge from research. However, with respect to practitioner-led research, the intellectual challenge of building a consistent theoretical argument is further complicated by the need to translate an experiential studio-based experience into written words and extrapolating how the situated experience may be generalised so as to be relevant to others. Even though early phases of writing can be propositional and expansive, the contribution from the final draft seems predominantly about fixing a vocabulary in order to make more concrete observations of the design research experience. The integrated activity of situating the research in relation to the literature introduces the practitioner to theoretical frameworks that support the act of naming research insights. The designer’s writing, the domain’s literature, and the provisional frameworks proposed by the practitioner, can all be understood as the written equivalent of diagrams: helping the researcher to draw, stake out the research topic, and temporarily pin down his or her ideas long enough to share them with others.
Dissertation writing is an activity that explicitly asks the practitioner to survey the landscape of his or her research project: the design projects, the methods adopted, the insights shared and the contribution the new perspectives propose for others. This exhaustive and comprehensive activity consistently pushes the researcher to develop a concise language by which to pin down the research argument and, as importantly, the research narrative. More than just descriptions of the project experience, design-oriented research challenges the researcher to theoretically translate and corroborate his or her practice-led insights to ensure they reveal more than the specifics of the design situation. In contrast to the other research interventions, the final draft of a dissertation may seem the most challenging activity given its more singular, centripetal pull towards fixing. Yet the various iterations of the dissertation can be acknowledged for the critical role they play in attending to the conversation with the research situation and exploring ways to ultimately structure the research project.
Echoing the critique culture of studio practice, the opportunity to present work to others was a familiar discursive exercise. Yet the discipline of preparing a structured presentation for formal review to critics, or at research conferences to a room of peers, requires a deeper commitment to the process of reflecting on and framing the narrative of the research. In a research context the presentations are central to the process of testing and refining the resonance of the designer’s research insights for others. For design-oriented research, the key to maximising the presentation space is to ensure that the performance of the presentation structures the discursive space. The goal is twofold: to frame a narrative for the research that establishes a clear way into discussing the insights, while simultaneously not prescribing the outcomes in a way that shuts down the opportunity for the audience to provide unforeseen observations or contest the interpretation of the insights. The practitioner’s individual expertise, whether it be animation, interaction design or 3D modelling, will shape his or her potential to harness the multi-modal nature of this discursive space. The objective is to weave design and writing-based material together into a conceptual framework that engages the audience to contemplate and contribute to the formation of the research insights.
3.2.1 Designing, Writing, Framing

Framing the Not-yet-Known: Grounded Diagrams

The discipline of noticing and grounded theory allows a theoretical position to emerge in response to the evidence that surfaces. The discipline of noticing places more emphasis on the experience than the data – and in this way seems a particularly relevant method for making tacit beliefs more explicit. The design-led appropriation of this strategy (beginning with a studio pin-up and culminating in the grounded diagrams of this chapter) requires the designer-as-researcher to attend to the overly familiar by objectively coding his or her work, then sorting the insights that emerge into different categories. The iterative process of sorting and resorting a body of work into different categories (for example, by formal language, context produced, conceptual orientation, media) promotes a close examination of the design work. The grounded theory challenge to repeatedly reframe how the practice is classified (until a point of saturation is reached) calls on the practitioner to cast aside already established frames and to objectively see the work anew. The strategy presents a way for the researcher to step outside of his or her practice to see whether the experientially and theoretically driven insights are taking into account what the project work is really revealing, or whether they are simply disclosing what the practitioner set out to make evident.
Quick initial sketches present a useful tool for assessing content at different phases of a research practice. Essentially operating as a conventional diagram, the diagnostic diagram presents a quick visual tool with which a researcher can provisionally fix elements within the project, as a way to get his or her head around the forces at play. The emphasis on diagnosis weights the experience toward attempts to audit or classify material to assess what they may reveal about the terrain being examined. This tool may be as immediate as a diagram sketched in a notebook to frame relationships between elements of the project, or a more elaborate exercise aimed at producing a comprehensive map or table of patterns the research is disclosing. The designer’s expertise in understanding the provisional elements of the diagram ensures that this process is one that can be in constant negotiation, allowing new ways of seeing the material to be revealed over time.
It seems counter-intuitive to suggest that practitioner-researchers could begin by conceiving of final projects for a research project before they have a thorough understanding of the literature and precedents in the domain they are researching. And yet the act of projecting into the space at the end of the research, by writing up a brief for a final design project, can be a productive framing exercise. By offering a different orientation to the framing activities that examine the work already done, the exercise of investing in defining the scope, audience and objectives of a design brief can reward the practitioner with a greater understanding of the domain being interrogated. Antithetical to the idea of beginning a research project by exhaustively reading the relevant literature, this exercise draws on a designer’s expertise at becoming informed about a situation by way of proposing a potential solution. Although it is a predominantly analytical written exercise, the conceptual frame being proposed ensures that the emphasis is on speculating where the research might go, in turn disclosing to the researcher the steps required to get there.
3.2.2

Manipulating the Push and Pull of Creative Practice

The communication design orientation of the case study focuses on the built-in slippage embodied in the disrupted visual language of the proposition diagram. However, what this research project can learn from ‘figuring’ extends beyond the graphic language of the practice spaces. The reflective research methods of the case study also help to make apparent the extent to which the agency of figuring lies in the discursive potential of a design process interested in temporarily-fixing-while-still-imagining. My analysis of the artefacts has led me to see how the value of fixing lies more in the process than the outcome, which in turn led me to realise that it might be a misguided ambition to fix an understanding of the design process, design thinking or how designers practice.

Further reflection into how I have navigated the case study design projects, with respect to the overall research program, has confirmed for me that research-through-design can be productively enhanced by complementary research-into-design methods. The observation that turned around my original hunch was that this adoption of non-design strategies can be done with full respect for the attributes a practitioner brings to the research experience – not just literally by creating design artefacts, but by working with the way a designer acts and thinks. This designerly engagement revealed the ways in which speculation-led reflection can be suited to enquiry where the primary motivation is to work toward an understanding, as opposed to determining a fixed understanding. This ability to make knowledge secure while embracing the uncertainty of knowing reiterates the designer’s and the artefact’s potential to maintain a discursive state.

The insights the case study reveals about design practice have allowed me to further extrapolate from the research experience to tentatively theorise about the potential of design-oriented research. In making explicit how the figuring of the proposition diagram worked, I put forward the theoretical proposition that troubling the creative tension of designing opens up a productive space for speculation-led reflection. I am interested in whether such an idea is transferable beyond the context of the proposition diagram. In parallel, the task of abstracting the situated experience of the visualisations has led me to notice the internal and verbal negotiations associated with various design acts. With these observations I ask what might come from taking the local, case study idea of speculation-led reflection and applying it to the negotiations of design-oriented research.
Linking these two ideas, I have become conscious of how, experientially, the act of negotiating the reflective conversations of research often seems cognitively similar to the challenge of figuring a proposition diagram. Schön would account for this idea of seeing similarities between a new situation and a previous one as the way the reflective practitioner mines the repertoire of prior experiences to assess how to make his or her next move (1983). In grafting much of the same vocabulary and conceptual framework used for figuring onto design-oriented research, I have come to see that writing can be equated to diagramming, and that the speculative orientation of the design projects can be equated to the proposition drawing.

At first pass I simply theorised that the writing symbolised the centripetal pull and the designing countered with the centrifugal push. It was only in beginning to sort the research activities into various different classifications – the grounded diagrams of this chapter – that I came to acknowledge that some of the research interventions resist this binary classification. In noting the activities on a continuum that positioned the more proposition-al and design-led writing at one end and the highly reflective, more analytical writing at the other, I realised that the activities clustered to the middle of the continuum were also the more discursive. Upon closer examination I also observed that these activities not only produced the most explicit moments for advancing my own knowing and substantiating the knowing I shared with others, they were also primarily multi-modal activities. These are the exercises I classify here as ‘framing’ activities. Just like the internal negotiation of the proposition diagram, the experience of conceiving and delivering a research presentation, for example, requires negotiating a range of cognitive and material moves. Just as in one presentation, the exercise might require the research-in-progress to be framed and reframed as a verbal narrative, a list of bullet points, a few diagnostic diagrams and a series of open-ended questions. Navigating these different activities requires a cognitive crosschecking of the frames against each other that troubles the process of researching, much as negotiating the elements of the proposition diagram does. Backing away from my earlier idea that the tension of design-oriented research was troubled by designing and writing, I can see the specific function of the more multi-modal encounters. This led me to see the framing activities as more accurately mirroring the protracted negotiation of figuring, in turn allowing me to tentatively propose a conceptual framework for design-oriented research.
The version of figuring teased out by the case study experience is made manifest through the reflective experience of designing with a drawing strategy that requires the designer to confidently assert what he or she does not yet know. Comparably, design-oriented research is driven by the incongruous act of the researcher attempting to externalise the tacitly understood insights that he or she is in the process of understanding. When it comes to the design projects, this is about integrating the proposition sketch’s speculative agency to put forward a new idea with the diagram’s capacity to temporarily fix these as-yet-unresolved ideas. The research equivalent is to understand that the framing exercises call on the researcher to temporarily fix an understanding of the insights, while simultaneously inviting discussion on what the research might disclose. In echoing the way that the proposition diagram amplifies the investigation of the idea being explored, the negotiation of a multi-faceted research program proposes a similar disruption to the normal design process by sustaining the designer-researcher’s attention to the reflections generated by the experiences.

In considering the transferability of the knowing disclosed by the case study, with respect to how we might begin to understand a practitioner approach to researching design, I find it useful to examine the holes in the argument. As one example, the proposition diagram stresses the challenge of simultaneously negotiating the push and pull of practice, yet even though the research program juggles multiple research activities and perspectives, this is not necessarily done in one move. The process of working through how the act of figuring and researching might be similar has led me to recognise how figuring, as a strategy, turns up the volume on the chatter of reflective practice. This observation led me to ask whether the utility of both approaches might rest with the capacity to amplify back talk.
3.3 Amplifying the Back Talk

THE DESIGN ARTEFACTS, THE PEER AUDIENCE AND THE RESEARCH PROGRAM

Schön positions design as a model for reflective practice (1987, p157). Although I agree that the practice of designing intrinsically draws on reflection-in-action, my experiences as a designer and educator lead me to believe that many designers are more predisposed to look forward to new possibilities than to retrospectively examine what just happened. What I have been aiming to do with the approach to research laid out in this dissertation is show how the practitioner-researcher can engage in reflection-on-action as well as a reflective conversation with the overall research situation, not just the project at hand. The question then becomes how to enhance the reflective skills of a designer so he or she can be an effective researcher.

This section presents a framework for understanding how my model for design-oriented research recognises three different forms of reflective conversation. Building on Schön’s notion of reflective conversation between the designer and the design situation, and the material conversation with the design, my thesis highlights the importance of also establishing a conversation with the research audience.

First, there is the notion of how the situation talks back. This focuses on the conversation between the designer and the situation, addressing how, in making a speculative move, the designer proposes into the virtual to evaluate the conditions, forces and agencies at play. In sensing his or her reactions to the proposition, the designer better evaluates the situation, enacting the process previously described as co-evolution of problem and solution (Cross 2007). Second, the design talks back. The conversation between the designer and the design works with the push and pull – from the known to the unknown – that is sparked by the material moves the designer enacts. The back talk comes from the design expressing its “desires, capacities and resistances” (Tonkinwise 2007), exposing the inadequacy of the designer’s initial hunch and calling for iterations that allow the designer and the design to work together to identify the next move (Schön 1987). Third, there is the twofold engagement of inviting the audience to talk back. In verbalising the back talk of the conversation with the design, the designer communicates the creative leaps that were often negotiated privately and are not evident through prototyping, as well as respond to interpretations of the artefact that may differ from his or her own. By externalising the conversation with the situation, the designer invites the audience to engage with his or her interpretation of the problem/situati-
tion, opening up unforeseen possibilities and further proposing potential next steps.

These conversations with the situation, design and audience, are what stop the designer short from simply executing ideas that he or she has already resolved in his or her head. The practice of figuring and a multifaceted approach to researching heightens the value of these conversations by ensuring the internal chatter is heard and translated, and that, through the process of consultation, the feedback is listened to and acted upon. In doing so, a model for validating design led research is opened up, but first this requires the volume of the back talk to be increased.
Looking back at these ‘ideas’ it is even unclear to me what I had intended the different modes of interlacing in the diagrams to represent. But what I distinctly recall from the exercise was that the material-led conversation revealed ideas within the formal language that I had not foreseen. The design was talking to me. And through designing the various iterations, a sequence of ideas was animated that allowed me to see a whole new set of possible scenarios. I credit the agency of this material conversation to the fact I was working with a formal vector language. The refinement that went into the mark making influenced: the amount of time spent; the level of engagement the decision-making required; and the time for extended back talk. This was a qualitatively distinct experience from the practice of drawing on a whiteboard or sketching on the back of a napkin. The space for real speculation and the depth of insight ultimately reflect this.
3.3.1
The Conversations behind Speculation-led Reflection

I will now go on to offer a conceptual framework for how the back talk of practice is amplified when designing the proposition diagrams and when undertaking design-oriented research. It is worth noting, however, that the account does not represent what I originally intended the diagrams to do. The ideas emerged from reflecting and discussing the process with others, evolving into a theory that is grounded in the practice.

THE BACK TALK OF THE PROPOSITION DIAGRAMS

The proposition diagram creates a space for interlacing the designer's impulse to speculate with the more critically reflective act of evaluating. This critical negotiation rests with the diagram's ability to temporarily freeze certain elements while simultaneously proposing into a space to better understand the design situation. The creative struggle that comes from working with these two drawing styles in the one visualisation amplifies what Schon calls the conversation with the situation.

The graphic language of the proposition diagram asserts possible propositions for content that are subject to ongoing negotiation. By presenting unsettled speculations and mutable content in an ambiguously precise visual vocabulary, the conversation between the designer and the design is disrupted by the call to temporarily fix possible propositions. The disturbance works to simultaneously deepen the interrogation of the subject and challenge the material representation of a proposition. Specifically, the level of conscious deliberation required for the refined diagrammatic aesthetic – as opposed to a rough conventional proposition sketch – extends the decisions to be made and the time dedicated to designing. In complicating and protracting the process, the material conversation between the designer and the visualisation is animated.

Furthermore, the intentionally open-ended nature of the proposition diagram seeks to draw the audience into a conversation to evaluate the designer's mapping of the subject. At first it presents with clarity – as information to be read – and only upon inspection reveals the ambiguities that require interpretation. The conflict that comes with this graphic language destabilises any commitment to a single reading of the visualisation. Drawn to reconcile the instability of the subject, the audience becomes engaged. The exposed fissures invite the audience into the discursive and collaborative act of discussing and figuring their own evaluation of the proposition.
3.3.1 The Conversations Behind Speculation-led Reflection

The multi-faceted approach of this project introduces a breadth and depth to the ways in which the designer-researcher engages with the conversation his or her research practice generates. Designing projects in a pure and applied context, for different audiences, reveals multiple perspectives and ways into negotiating the social transactions and real-world considerations each design situation presents. In addition, the applied context works as a model for gathering external evidence of how others engage with and perceive the limitations and potential of the research. Just as significantly, the parallel reflective space of blogging illuminates connections and distinctions between discrete projects, while the additional reflection-based interventions mark explicit moments for deep critical retrospective reflection. Together, the reflective-based methodologies and the speculative practice-led projects provide a comprehensive conversation with the situation.

A design-led commitment promotes the designer’s core practice as the primary orientation for the research. In consciously adopting a visual approach to the diagnostic exercises or applying the discipline of noticing to a studio-based pin-up, the material conversation between the practitioner and artefact extends beyond the designing of the studio projects. The consideration of how and when to introduce material modifications to the reflection-based activities calls for a heightened commitment by the researcher to notice and evaluate the agency of making as a way of thinking. This hybrid approach asks the various research interventions to perform in new ways that advance the exploration of the limitations and transferability of designing. The reflection-based interventions are dedicated to making insights more concrete, and thus prompt material solutions including research-questions-as-thought-bubbles or epiphany-flashes being stuck onto the pin-up wall. In turn, this expands what might conventionally be limited to a verbal or written mode of externalising, while again amplifying the back talk between the research artefacts and the researcher.

The conversation between the researcher and the audience frames enquiry as an inherently social act. A design-led approach calls for critical reflection from a place within and in transaction with the design situation, as opposed to only evaluating from a place of personal experience or with the detachment of a spectator (Schön 1992). Valuing experiential insight while looking for critical subjectivity, the back talk of this approach listens to multiple voices and perspectives. Enquiry is understood as a process of becoming, challenging the researcher to bring the audience with him or her on an excursion to the unknown. My propositional approach to reflective blogging and the visual/verbal framing of my research presentations have presented critical and candid social contexts for externalising my insights.
Yet the audience’s role asks for more than one-way corroboration to enrich and build upon the insights proposed by the artefacts and designer. The usefulness of the discursive propositions lies in their capacity to make their relevance evident by moving the conversation forward. In opening up the dialogue, the researcher and audience negotiate the revision of perspectives that will generate new understandings and confirm the resonance of the outcomes.

The above conceptual framework allows me to observe how back talk is amplified in the process of figuring the proposition diagrams as well as in the design-oriented experience of researching. This conversation between the knowing of the case study and the meta-conversation of this research underlines the significance of this new understanding.

My observation that a designer can intentionally complicate and protract the creative process as a strategy to intensify back talk begins to account for the core knowing that arises from this project and will allow other practitioner-researchers to adopt a design-oriented approach to researching. This new understanding supports what others have also argued (van Schaik 2003), that in attending to the reflective conversations of practice, designers can successfully provoke rich insights, challenge perspectives and ultimately reveal new understandings of their work. My work contributes to this broader field of scholarship by demonstrating how this can work for the communication design professional/educator.
As part of my day job I had organised a workshop on the transferability of design knowing. We were in the process of rethinking our undergraduate programs and this was a topic we could no longer ignore. If we were going to integrate 21st-century skills like collaboration we needed to think about what expertise our students brought to a team project with anthropologists and psychologists. If we were going to be honest about the number of graduates who end up working in other fields we needed to educate graduates to understand what they had learned even if they never worked in fashion. If we were going to develop a vertical stream of courses for all students in design then we needed to be able to name the core attributes of design. Whichever way you looked at it the faculty needed a collective understanding of what it meant to call yourself a designer.

Halfway through the workshop it became clear that the problem wasn’t that we had no shared understanding; it was obvious that we struggled to have an explicit understanding. We could have filled up hundreds of sticky notes with the formal and technical skills we taught within our fields. But the brief to write down the tacit knowing we relied on to think and act like a designer (but not a typographer for example)… well, that was really hard.
TYPOGRAPHY

Create something from beginning to end.

VISUAL LITERACY

CREATIVITY
3.4 The Voice of the Practitioner-researcher

This research is not concerned with addressing all the reservations mounted against design research, for to some extent it takes a position by simply asserting the value of designers working with their own value system. Yet research that seeks to make a contribution to design scholarship, and the academic discourse that surrounds design, needs to at least intend for the work to offer more than a practitioner’s account of his or her research practice.

One way to evaluate my research is to ask whether the design-oriented approach of the case study has influenced the kinds of insights the study has generated. In the introduction to this dissertation I began with the paradox that the scholarship of ‘design research’ often limits the role of the practitioner by undervaluing design as a research method. My decision to privilege the design projects as the primary method of this enquiry to some extent addresses this concern. Yet my point is also about how the practitioner’s perspective is often left unexamined, diminishing the capacity of the studio-based educator to offer a practitioner’s perspective of a designer’s expertise in a meta-level discourse about design praxis. These points seem important to return to if part of the rationale for this research is to equip educators for the conversations that need to happen in debates over the future of design education. If we are interested in redirecting the educational model from training for a specific field through mentoring best practices to being able to clearly signal and discuss the attributes of a designer across several platforms, then it is critical for design education that designers have strategies by which they can examine what they know and be able to share this with others.

If I had adopted a narrow practice-led approach, as I set out to advance when I began my research, its contribution would be more limited. My own mastery of visual communication would have advanced and the research would have proposed (but not necessarily articulated) the productive role ambiguity can play in visual communication. It is highly likely, however, that these nascent insights would have had little traction for a broader conversation about design practice or design research.

My approach to research has sought to work to a practitioner’s strengths as a way to engage the practitioner-researcher and the research audience. This was a core consideration of my research approach and depends on all the components of an integrated, multi-faceted research program. I believe that the analysis of the case study suggests that the approach does more than accommodate a designer’s expertise; it fosters an interrogation
of design praxis that comes to embody the sensibilities of the practitioner. Specifically, the navigation of the research from multiple perspectives and the interest in pluralistic interpretations of the visualisations has led to a framing of design knowing that reflects the possibilities-driven nature of design practice. Lastly, the model revolves around discursive artefacts and a research framework that seek to amplify discussion. The capacity of the researcher and his or her artefacts to engage an audience in debate is central to how the practitioner assesses the transferability of the insights being shared. This emphasis on amplifying the back talk of creative practice is ultimately about establishing resonance for the research: building from small observations through to well-formed understandings. The extent to which my research approach succeeds in doing this while maintaining its design orientation is most evident in the conclusion that my new understandings could be forever in a state of becoming.

As much as my research seeks to engage and work with the designer's expertise, I have also come to advocate for interventions that require the designer to step outside of his or her practice. This raises the question of whether the inclusion of the reflection-based interventions in any way diminishes the practitioner's perspective or just allows it to be examined from multiple perspectives. My sense is that without the reflection-based commitment many of the practice observations would remain only partially understood, in turn limiting the potential for the practitioner's perspective to enrich the design academy's understandings of practice. I still think the qualitative contribution of even the reflection-based exercises rests on the design projects as the foundation of the reflection. If a practitioner were to develop the reflections in the absence of an examined practice, then the contribution of the design process and artefacts to disclose a practitioner's knowing would be shut out and the defining perspective of the practitioner somewhat diminished.

The caveat to this position is to also acknowledge the labour-intensive nature of the multiple tiers of reflection. There have been many times that I've wanted to limit the scope of the research to the case study and to communication design. Also, many practitioners are drawn to dive in and explore the issues most directly related to their practice, so the traction of a practice-led project is more immediate and relevant. For these reasons my approach is predominantly relevant to educators specifically interested in contributing to discourse beyond their specific fields. Yet, at my institution, for example, that is an ever-increasing group of faculty as more transdisciplinary graduate programs are developed and foundation programs are reconceptualised.
Chapter Summary

In conclusion, I take the position that it is important for practitioners in the design academy to assert and defend the appropriateness of design research that, for example, does not seek certainty or even to privilege an analysis of how things are, or should be, in the world. Respecting the designer’s motivation to consider how the world might be can extend to consideration for how research is framed and shared with an audience. This allows the knowing of the research to be in constant conversation with the framing of research programs, and supports open speculation into the potential of the research outcomes (Morrison and Sevaldson 2010). This discursive space of negotiating research findings is what I mean when I refer to the knowing of practitioner research as moving toward an understanding, forever in a state of becoming. Given that designers are less motivated to engage in situations and/or content that cannot be changed (Krippendorf 2007, p72), it can be productive for the ideas disclosed by the research to remain open, to be suggestive of what can still be altered.

So far, I have argued that the designer-researcher can create critical discussion out of the possibilities proposed by research insights – as a strategy toward furthering his or her understanding of the practitioner’s orientation. Research can be understood as the intention to make a substantive contribution to the knowledge of that discipline. My research program does not accept that this requires a theoretically abstract or evidence-driven empiricist study, but nor do I take the position that this goal can be achieved through practice alone. This research program models an approach that calls for active interrogation and external consultation. The research process sought to make my design-led insights resonate with others by further disclosing the possibilities and limitations of how we currently understand practice. I am not interested in producing world-making artifacts; rather, my research approach seeks to offer constructive ways to review and critique customary practices, allowing the practitioner and the audience to see anew their perceived assumptions and understanding of design praxis (McLaughlin 2007).
CHAPTER FOUR—
The Knowing
CHAPTER FOUR—
The Knowing

In this final chapter the research findings from the case study are extrapolated to propose the potential of design-oriented research beyond the specific situation of this project. The chapter outlines the key elements of the design-oriented research by presenting three different frames: methods, integrity and reflection. The research proposition is intentionally dissected into three individual frames to support the practitioner-researcher working with the elements of the model that resonate most for him or her.

Young and Spencer posit that the explorative nature of research through design places emphasis on “conjecture”, whereas research into design draws on a discursive process of “conjecture and refutation” (2009). This research claims to operate at the space between research through and into design, and yet the formative model building of this chapter also represents the limited potential design-oriented research offers to theory construction in design. The research outcomes are built into a speculative, propositional model for design-oriented research, illustrating how the case study ideas can transcend the field-specific practice. This manifestation of the practice-insights as propositional model is constructive if the situated knowing is to move into a more theory-led discussion of design praxis. However this contribution does not represent the same conjecture/refutation dialogue as that of conventional theory construction and does not offer the same contribution. The commitment to translating the experiential knowledge and inserting the practitioner’s perspective within this more abstract discourse may still offer a strategy for triangulating evidence-based and discursive texts with the knowing of practice.

This chapter presents a speculative form of reflection, sketching a model that intentionally explores how to use the research case study to maximise the potential of design-oriented research. The conclusion acknowledges the significant shifts in understanding that have occurred as a consequence of this creative, critical and first-person investigation, valuing the move from an initial, defensive hunch toward an informed, articulated position. The final section emphasises the discursive nature of the knowing generated by design-oriented research, highlighting the negotiations of a research practice that is more interested in moving toward a new understanding than actually claiming a position.
4.1 Framing the Methods

The Multi-faceted Research Program

*Dissertation Diagram fig. 14 (p219)*

The orientation of this research project is located on the humanities end of the practice-based methodologies continuum mapped in Fig. 2, focusing on the expertise of practitioners motivated to reflect upon and interpret their own tacit knowing. The conceptual framework for design-oriented research that this section puts forth focuses on the orientation developed in this project, yet recognises that the utility of a multi-faceted approach would also be relevant to a practitioner-researcher adapting methods and exercises from other disciplines.
FRAMING THE METHODS

This big picture diagram presents the multi-modal, yet integrated research program of this design-oriented research. The multiple method approach deploys a range of reflection-based activities (concentric circles) to examine the design projects (exploratory lines) independently and collectively. The targeted orange areas highlight the hybrid framing interventions that further debate, shape and communicate the insights illuminated by the act of designing.

A Multi-faceted Research Program
It was a formal presentation to a jury toward the end of my PhD – or that is what I hoped. The script was making an argument for how the topic was confusing because it could be seen through so many different lenses. To visualise the point I was making I had quickly mocked up some visualisations into kaleidoscopic images to metaphorically communicate the idea that with one twist the whole project was seen from a new perspective.

At the end of the presentation two jurors were debating what really resonated for them about the project – there was little common ground between them. The theorist was interested in the research model I was proposing, one that accommodated insights revealed by my doubts, and the potential of a designer researching into the space of the unknown. The practitioner was embarrassed by the personal narrative and wanted to hear more about the specific agency the visualisation studies signified for professional practice in general. What they could agree on and kept coming back to were the kaleidoscope images from the introduction, ignoring the 40+ images of the proposition diagrams and key points. The metaphoric diagrams simultaneously framed and opened up the conversation, allowing both the jurors to use the refracted images to make their case. Out of this discussion a consensus emerged and the broader research project embraced the plurality of its perspectives.
visual literacy + visualizations + visual thinking
4.1.1

The Kaleidoscopic Agency of Design Research

The design projects are the heart of this PhD, with the design deliberations and audience feedback forming the very foundation of the research project. Yet, the design orientation I have adopted here seeks to shed light on the contribution that other modes of enquiry may also offer the practitioner-researcher. The multiple methods I have adopted ensure that the propositional enquiry of the design projects is complemented by critical, reflexive enquiry, led by the practitioner, into the experiential practice of designing. My research program was explicitly conceived to explore the research subject from multiple angles and to evoke multiple interpretations of how the potential of the research might be understood. The dialogue between designing, writing and framing ensures that the evaluation of the research situation is emergent and mutable. To meet these expectations the research program is required to be agile and responsive to the new insights and revised hunches that develop throughout the cycle of proposing, making, discussing and reflecting.

By embracing multiplicity and calling for an iterative approach to enquiry, my research program presents a model seemingly in perpetual motion. The multi-modal interplay between reflection and action allows for the research project and its outcomes to be framed and reframed so new perspectives can be noticed and evaluated. This back-and-forth is key to the process of constructively revising the research plan of action (Findeli), supporting the intentional act of holding alternative interpretations that require the researcher to “remain flexible and sensitive to alterations and variations” (Mason, p194).

The key design activities of design-oriented research can be understood as promoting a speculative engagement with the visualisation content. These activities can be characterised as the most overtly exploratory of all the activities I undertook in the project as they predominantly focus on proposing and considering new possibilities. The design activities provided the space to explore my own tacit understandings, with the goal of identifying insights that might be relevant to others. This is where the background understandings of my own practice first surfaced.

By contrast, the writing activities can be understood as driving the analytical framing of the research project. These activities can be seen as the most overtly reflective type of activity I undertook, emulating the centripetal force of creative practice, in which I was driven by the need to label and explain the research knowing. This is the place where background under-
standings of practice are named in an effort to critically locate the insights and ideas that emerged.

The framing activities are conceptual and can be understood as negotiating the space between designing and writing by iteratively putting forth conceptual frameworks for the research. These activities highlight the negotiation of creative practice by using words and images to speculate and reflect on how to construct a research narrative. Even though the designing and writing play a part in communicating ideas, this is the key place where background understandings of practice are shared and debated. My commitment to translating the insights of the design projects to elicit discussion dictates that the framing activities were primarily interested in exploring whether the ideas resonated for others.

Together, the design projects and the reflexive research interventions of writing and framing engage the researcher to repeatedly – and in different ways – be in conversation with others as a strategy for recognising and challenging his or her own perspectives. The process of a practitioner-researcher discussing experiential knowing with others allows in-common understandings to surface and to encourage further speculation. The sequence of activities would never be this clearly delineated, yet it can be productive to perceive the first two stages of the research cycle, the proposing and making, as led by design-based activities, quickly followed by the framing exercises that set up the discussion and the writing activities that temporarily fix the reflection, before the process of designing begins again.

It is not a new idea to propose the merits of writing alongside designing. What is more distinctive about this approach is the framing activities. Young and Spencer quote an unpublished research report (2008) by their colleague Singleton, which reflects on the value of writing and designing simultaneously as part of the same research process:

*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* (2009, p4).

I agree with Singleton’s statement, but I came to see the research program as much more nuanced than how he accounts for the value of oscillating between the applied designing and theoretical writing activities. I came to appreciate how speculative a process writing could be – and how analytical a diagnostic diagram could be. I was interested in the role of speculation-led reflection and this led me to explicitly explore the potential of methods that could not be simply characterised as a design project or as writing (for example the noticing-led diagrams). In addition, the framing activities
importantly call out established practices in design, such as the critique. In considering how the critique evolves into a research presentation, the activity was pushed further; presenting more than the work in progress, the challenge was to visually and provocatively frame the thesis for discussion.

4.2 Framing the Integrity

The Appropriateness of Design-oriented Research

I will use the notion of appropriateness to consider the overall integrity of the design research approach being presented here. Cross uses the notion of appropriateness to describe designers’ core concern for how successfully a project serves the purpose it was designed for (2007, p18). Arguably, Cross uses the term ‘appropriateness’ to acknowledge the central design activity of negotiating a multiplicity of considerations, in an attempt to design something that is appropriate for the stakeholders, client, community and environment.

For this research project the notion of appropriateness rests with the capacity of the research to ‘resonate’ with the designer, and more specifically, the practitioner-educator. This resonance operates in two parts. First, the model I propose needs to reflect the designer’s interests and expertise enough to motivate him or her to develop a research practice. Second, the way the research is shared and the kind of knowing produced need to be relevant to practitioners. I understand these two concerns to work as basic commitments for the research, similar to the way I would keep ‘checking-in’ to see whether my design propositions were serving the stakeholders of a design project. I say ‘checking-in’ because designers often intuit the appropriateness of their work through discussions and previous experience, rather than relying on empirical evidence.

To address the first benchmark for resonance I discuss the ways that the research approach modelled here seeks to motivate practitioner-educators to undertake research by aligning their expertise with the discipline of researching. Referencing Cross’s term (and book title) ‘designerly ways of knowing’, this section is titled ‘designerly ways of researching’ to emphasise that my project seeks to model a critical approach to researching that draws on the core abilities of a designer. Cross summarises the expertise of a designer by acknowledging his or her ability to resolve ill-defined problems, adopt solution-focused strategies, employ abductive and productive thinking and to use non-verbal graphic modelling media (2007, p38). In
Framing the Integrity

Designerly Ways of Researching

This diagram illustrates how a robust research framework can commit to a practitioner-led approach while simultaneously addressing some reservations about practice-led research. Intended to address the basic research criteria of being inquisitive, purposive, informed, methodical and communicable, the characteristics identified account for how a designer might bring his or her own expertise to the critically, reflective practice of research.
what follows, I propose various ways these skills can be aligned with the ambitions of research. My assertion is that this approach presents a particularly designerly perspective on how practitioners might shape a practice of researching that is appropriate for both the discipline’s expertise and the expectations of academic research.
I was at a symposium where the keynote speaker was asked a question about how we would reconcile a particular economic theory in relation to his vision for everyday sustainability. His response was to dismiss the question as irrelevant to himself as a designer. In the awkward silence that followed, you sensed the audience’s embarrassment on his behalf that he had been tripped up by this question and had no response. But we were wrong. He continued by thanking the person for asking a question that gave him an opportunity to qualify his role in sustainability discourse with respect to his expertise. I loved that he could simply acknowledge that some questions completely bored him. The speaker’s ability to specifically articulate what a designer brought to the sustainability conversation allowed him to not sound apologetic or defensive about the limitations of a designer’s expertise. His capacity to mark the terrain of the designer appeared to turn the interdisciplinary audience around.

For the rest of the evening I dreamt of what it would be like if it were commonplace that designers in the academy and in practice could so confidently promote to others the perspective they bring to their work and why it might be of value.
design knowing + design thinking + design agency
4.2.1

Designerly Ways of Researching

This project recognises that each disciplinary orientation brings its own core perspectives. Given that research resonates in distinct ways for each community, design-led research must speak to the core concerns of designers in the same way that theory-led research is often written for an audience of scholars. This section asks what it would mean to build on the expertise of the designer while ensuring that the research makes a valid contribution to design knowing. For example, the opportunistic nature of designing teaches a practitioner to be skilled at thinking in action. This ability to constantly evaluate the potential of multiple ideas and imagine one or two steps ahead where each proposition might lead can be a useful skill for interrogating mutable terrain.

This section pulls back to translate how the integrated nature of the research design of this program embodies the skills a designer might build on to practice as a critically reflective researcher. Recognising the ways in which a design-oriented approach could be characterised as a call for the designer to think like a researcher and the researcher to act like a designer, the following paragraphs downplay the distinction between designing, writing and framing to focus more on what a designerly way of researching might look like.

In the introduction, I proposed that it was possible for design-oriented research to meet the characteristics of being *purposive*, *inquisitive*, *informed*, *methodical* and *communicable*. In what follows I respond to Cross’s list of characteristics for good research (2007) by specifically identifying what the practitioner brings to the practice of research.

The first characteristic for research is that it be purposive: that the topic be identifiable and capable of investigation. To consider how the designer-educator responds to this is to understand the identification of the research topic in relation to the speculative, opportunistic nature of designing. Fixing the hypothesis or area of investigation is counter-intuitive to the hunches of a designer; however, by iteratively asking whether the material or theoretical proposition is appropriately addressing the objectives of a research project, a more relevant cyclical model for design research is put forth. The design-led practice of co-evolution of the problem and solution can be deployed to define the research program, the object of study, the design projects, and ultimately the main argument of a thesis. The design-inflected approach to action-research modelled here allows for a purposeful yet intentionally revisable action plan. Haseman’s description of the practice-led researcher proposes that they:
construct experiential starting points from which practice follows. They tend to ‘dive in’, to commence practising to see what emerges. They acknowledge that what emerges is individualistic and idiosyncratic. This is not to say these researchers work without larger agendas or emancipatory aspirations, but they eschew the constraints of narrow problem setting and rigid methodological requirements at the outset of a project (2006, p3).

By responding to the questions or hunches that emerge from practice, the researcher may appear to bypass the call for questioning the worthiness of the research. Yet, beginning with a question of direct relevance to the researcher allows the designer to re-frame his or her hunches as research stakeholders are considered and practice understandings challenged. Such an approach sees the potential for the reflective conversation with the overall research situation (including the audience) to determine the relevance and appropriateness of the research’s purpose or ambitions.

The second characteristic for research proposes the importance of being inquisitive, or enquiry motivated to acquire new knowledge. The research commitment of this approach focuses on how the uncertain knowing of practice can be translated by working with the discursive nature of designing and the designed artefact. Acknowledging the experiential knowing of design practice, this type of research is not interested in building a thesis on the back of evidence-driven knowledge, but is drawn to exploit the designer’s expertise at imagining possible worlds. Therefore, research insights can emerge from the prototyping act of designing: a process suited to tackling the particular kinds of ‘fuzzy’ problems and situations that are not easily defined at the outset but can be considered by proposing into the research situation (Rittel and Weber 1973). In this way, working with the discursive agency of design-oriented research presents a practice-led strategy for exploring the ill-defined situations of research into design praxis. Practice-led insights can be communicated to engage the design audience to generate their own interpretations and imagine the potential of the work. In turn, this liberates the practitioner to frame the discussion of his or her cloudy, tacit knowing as a critical move toward a new understanding.

The importance of the designer being informed by previous and related research is the third basic characteristic of research. External design precedents regularly inform the practice of a designer, as does the repertoire of previous experiences that he or she draws upon when designing into a new situation. In addition, the designer as researcher has to know the literature of design scholarship if he or she seeks to participate in discourse that surrounds design research and education. By drawing on the practitioner’s predisposition for thinking through problems by proposing provisional solu-
tions, the designer-as-researcher can propose design iterations, half-formed theories or tentative conceptual frameworks into a space as a strategy for becoming better informed. This designerly approach allows the informed researcher to not just practice reflection in, and through, action, but also to reflect on his or her reflection of the situation (Schön 1992). This reflective conversation with the research situation allows the researcher to synthesise an analytical approach of assessing “what is” with a projective approach of wondering “what shall be” (Jonas 2007, p206). Conceptualising the research program as adaptive, as a series of activities and interventions that can respond to the changing direction of the research, further supports the practitioner informing him-or herself of the research situation by simultaneously framing, investigating and identifying the research subject.

The fourth characteristic of research calls for a methodical, disciplined approach to research. A design-oriented approach proposes that it is possible for the practitioner to be both performative and methodical, as long as ‘methodical’ does not translate to prescribing a linear, predetermined approach to a research project. Scrivener notes how established notions of theory and practice can trouble the procedural experience of practice-based research, specifically acknowledging how working methodically through conventional research steps might paralyse the practitioner-researcher. Scrivener came to the realisation that PhD candidates did not need to initiate their research by reviewing the field. He came to understand that “making is the central driver and the creator of material for thought in certain modes of practice” (n.pag). For the designer-researcher, being methodical might not refer to a prescriptive sequence of steps, but the adoption of strategies that support the feedback loop between the designer-researcher and the design work – between the research audience and the research situation. The crafting of a research program that enhances feedback calls for multiple research activities, the consideration of the subject from multiple perspectives and the communication of the research through multiple modes. The ‘multiplicity’ method may not lend itself to pre-determining the research direction yet it can tap into the cognitive discipline a practitioner brings to designing. The fluid yet complex character of such a research program requires a researcher who can successfully navigate input from multiple fronts and negotiate the reflective conversations generated by the different modes of enquiry. The practitioner’s capacity to process and communicate the back talk of the research interventions establishes the consultative integrity of the design-oriented research model presented here.

The fifth and last research characteristic Cross mentions emphasises the value of generating results that are accessible to others (2007). A design-oriented approach is not interested in whether the research is ‘repeatable’ but does seek to produce insights whose relevance for others can be cor-
roborated. The designer’s practice of alternating between different activities (for example, designing, writing and framing) is connected to his or her ability to disclose new ways of seeing (Akin and Lin, cited in Cross 2007). Exploiting the multi-modal nature of design practice, a design-oriented approach promotes the act of dissemination as an evolutionary and discursive practice. Integrated into a research program, these modal shifts can do more than provide a space by which the practitioner can ‘notice’ new insights; multi-modal enquiry can help the audience to potentially see things from a new perspective by offering a new conceptualisation of the content (Doloughan 2002). This approach allows for the communication of research outcomes that can come to embody the possibilities the research community might also envision for the research, rather than simply presenting the researcher’s view.

4.2.2
Reflection, Relevance and Resonance

The integrity of my approach to design-oriented research does not, however, rest with designerly ways of thinking and acting alone. The inclusion of reflection-based methods gives the designer-researcher additional tools by which to access his or her own knowing and to communicate the insights so he or she can inform the perspectives of others. As mentioned in chapter 1.2.3, the integrity of the approach is also concerned with how the mode of sharing the research and the kind of knowing produced further establishes resonance for the immediate research audience engaged in the consultation process, and for the distributed audience of practitioner-educators whom the research seeks to motivate. This interest in research that makes a contribution beyond the practitioner’s mastery requires several tiers of reflection and ultimately places more weight on the more discursive framing exercises that provide a space for direct consultation and corroboration of the research’s relevance.

Making a case for the validation of practice-led research, McLaughlin places responsibility on the practitioner-researcher to verify “that there is evidence that this aspect of the situation that seems interesting … [also] … shows up interesting possibilities and limitations of established perspectives in the domain…” (2006). I appreciate the intention of this argument, but am unsure what type of evidence McLaughlin would consider sufficient to meet her expectations. In this project, the claims that I am making are predominantly the result of secondary reflection and therefore offer only anecdotal evidence of the extent to which the methods I have adopted or the claims I am making either have or will resonate for others.
However, there are several structural moves within the approach to research presented here that I believe offer some support for my intention of producing insights that are of interest to others. For example, my ongoing reflective conversation with the research situation drives the periodic evaluation of the overall research program, serving to iteratively consider the appropriateness and relevance of the research direction with respect to the stakeholders. Reflection is stimulated and nourished through engagement with the applied project space of designing, allowing the initial framing of the research project to be revisited and the research questions revised (Findeli 1999). The reflective conversation with the research situation supports my commitment to examine the research subject from multiple positions so that the research can be redirected as my understanding of the subject emerges. The direction of the research is informed by interventions, such as the grounded theory pin-up, that provide discrete moments for assessing whether my research-in-progress interpretations are grounded by the project data. Activities such as these were intended to subvert research insights that would simply reinforce my own base understandings. Similarly, the use of parallel practice spaces provides a range of different contexts by which insights can be further investigated and compared. Additional ways to cross-check my insights, not explored in this case study, would be to work within a collaborative framework or to simply get insight into the audience’s interpretations of the research potential without first framing my own.

Then there are the moves enacted at the level of developing the insights. The negotiation that translates research insights into new understandings works on the basis that when a researcher is presented with a perspective alternate to his or her own, he or she might more easily acknowledge the implicit background understandings he or she has been holding onto. Findeli describes this “back-and-forth movement” between the stages of insight and validation as essential “in order to stabilize the truth” (1999, p111). I find this notion of bringing into focus the beliefs already held is an appropriately reflective yet intuitive way of drawing a practitioner and/or the audience to pay close attention to how new perspectives might challenge or reinforce what they already know. In the case of my model for design-oriented research, the essential step of translating practice insights into a substantive contribution to an understanding of design sought external consultation through multiple modes of peer review. Conference papers and publications have worked within formal and informal peer review processes and research presentations and work-in-progress critiques have presented an opportunity for peer feedback that was not simply one-directional. By integrating an ongoing discussion with the research audience throughout the research program, the step of consultation becomes
central to the process of corroborating the insights. I see corroborating as a process, since the objective is not on securing a fixed understanding of the research potential. The process is more importantly about engaging in the act of examining the practitioner-researcher and the research audiences' individual assumptions of practice and collective understandings of design.

The overall integrity of the research model proposed by this PhD is embedded in my commitment to engage the practice community of educators in both undertaking and debating the potential of practitioner-led research projects. The model that I have developed has arisen out of the experience of the case study. I have sought to extrapolate from my own situated experience so that others can identify key structural and procedural characteristics of design-oriented research, yet I still understand that the project is essentially propositional. The development and the writing up of the model is in part an exercise for me, the practitioner-researcher, to examine and discuss the potential of this approach with others.
4.3 Framing the Reflection:

The role of reflective practice in researching design

Dissertation Diagram fig. 16 (p237)

In chapter 3.3 I outlined how reflective conversations within a design led research practice can lead to newfound understandings. Working with these understandings, this section concerns itself with identifying the tiers of reflection within this research project. I propose that the different reflective modes allow the practitioner-researcher to find the right frequency for each reflective conversation and therefore to tune in to the back talk of the research practice.
1. PROJECT-DRIVEN REFLECTION
In action reflection that promotes a speculative conversation with the design process and artefacts.
Design-based methods: design iterations, final projects and critiques.

2. REFLECTION-ON-PRACTICE
Stop-and-think reflection that facilitates an inquisitive conversation with the design situation.
Text-based methods: blogging and academic research papers.

3. RESEARCH-FRAMED REFLECTION
Ongoing retrospective reflection that negotiates a reflective conversation with components of the research.
Framing methods: diagnostic diagrams, presentations and potential project briefs.

4. REFLECTION-ON-RESEARCH
Stop-and-think reflection driven by evaluation of the whole research experience (methods, insights and projects).
Research program: grounded theory pin-up, PhD reviews and dissertation writing.

FRAMING THE REFLECTION
This diagram identifies a tiered approach to reflection in relation to research activities.
Project-driven reflection represents a mode of reflection driven by designing, the reflection-on-practice accounts for the reflective acts promoted by writing activities and the research-framed-reflection enables the framing of emerging insights. Drawing on all these activities, reflection-on-research facilitates an understanding and the communication of the research.

Reflective Practice and Researching Design
I was surprised the reading was making any sense. I often feel at sea reading philosophy and have never grasped the ‘thinging’ and ‘wording’ of Heideggerian theory. But this time the ideas were resonating with my own experiences of designing and I was drawn to my blog - to speculate and reflect upon what these abstract ideas might mean in relation to the situated context of my research. The theoretical proposition seemed like a gift that more than confirmed what I believed I had always tacitly understood, but also gave me a way of characterising my newly articulated position.

Then … I spoke with one of my philosophy supervisors and he pointed out the extent to which I had misread the paper. Turns out that my own work wasn’t really as aligned with the text as I had first interpreted. I was disappointed. I had enjoyed the authority the text offered. Still. Between the conversation with my supervisor, the text, and my situation the discursive space was animated. I had been looking for a quick answer, forgetting that first I had to negotiate the chatter from all directions.
Revelation, not representation

Published on September 9, 2006

I spoke with Cameron earlier in the week hoping that a conversation with a philosopher might help shed some light on how this Ontological Designing business relates to my topic. I am not going to pretend to understand the point he was making about how Heidegger was concerned with revelation instead of representation (something about "unconcealment") but I liked the way he unpacked this in relation to my practice versus the kind of approach to visualisation that E Tuftes advocates. Cameron explained that I was concerned with how one learns by participating in what one is learning (first the practitioner-researcher attempting to educate others what they have learnt and secondly the audience further actively translating the relevance for themselves)...that my visualisations seek to explore something yet to be represented. In comparison Tuftes is actively attempting to represent (and he would stress truthfully) the experience or information. Whereas Tuftes seeks to explain, document, communicate, I am more interested in opening a space for exploring, proposing, sharing.

And to an extent this emphasis on sharing also became part of the conversation. The distinction Cameron saw between my ideas and Ontological Design was that my practice was explicitly more social. My pre-occupation with sharing the work with my peers, giving a democratic weight to the dialogue between my visualisations and the audience was distinctly different to the Heideggerian concept. He explained that Heidegger is emphasising how the artefact influences people, where as I am more specifically promoting an interpersonal, participatory approach...inviting the design community to then inform the next
Dorst and Lawson deploy the idea of presenting multiple perspectives of design to paint a comprehensive picture of how we might understand design. One of the frameworks presents a model of design where design practice is understood as operating on four levels; beginning at the ground level of the specific design project and working through to the top level of the design profession (Dorst and Lawson 2009). I reference this model of design because it helps conceptualise how the reflection of design-oriented research operates, and potentially frames the areas of design research about which the practitioner needs to be critically reflective. The first level describes the activity that revolves around a specific, situated design “project”, acknowledging that the majority of student assignments simplistically frame design education in relation to the project. The second focuses on the design “process” and how a designer might work across a range of projects, drawing attention to how reflection-on-action might disclose patterns to the designer of how he or she approaches certain situations. “Practice” represents the third level of activity and deals with the reflection and experiences that inform the professional practice of a designer. For example, this might include a particular social commitment or professional area of specialty. The fourth level of activity in the taxonomy is the “profession”; this draws attention to the activities that influence how the profession is defined and understood.

For the purposes of my research, it is useful to propose a fifth level of activity on which a designer and/or researcher can contribute to understandings of the domain of design. This research project’s ambition is to consider approaches to research whereby a practitioner could examine his or her ‘practice’ of design – by undertaking projects and reflecting on his or her process. It does not just intend to advance how the specific profession (such as fashion design) defines itself, but also to consider how these insights might contribute to how we understand the domain of design in general. Inevitably, the individual practitioner-researcher is probably the person who will benefit the most from this reflective transaction, yet even positioning my research as seeking to make a contribution beyond the practitioner’s own mastery and that of his or her professional field does call for an additional tier of reflective engagement.

The reflective conversations of chapter 3.3 focus on the strategies that seek to deepen the reflection when the designer is in conversation with the design, the audience and the situation/research. The diagram at the beginning of this section works with a typology I introduced in chapter 1.5.2,
when accounting for how this project’s reflective conversations intersect with Schön’s various descriptions of reflection.

‘Project-driven reflection’ is concerned with reflection motivated by the design-based activities: specifically, the amplified reflection-in-action promoted by protracting the negotiations of designing. This is the level of reflection that might be found in a critical practitioner. The ‘reflection-on-practice’ tier is reflecting on the design experience through writing. This activity parallels the reflection of professional practice – albeit in an academic context – whereby a reflective practitioner stops to question (often by way of interview, presentation or publication) what makes his or her practice distinctive. In making these reflective insights explicit a designer can begin the process of identifying how to build on his or her expertise. ‘Research-framed-reflection’ is specifically defined by the research context, so is distinct from the reflections of professional practice. Scrivener identifies this step in a creative practice research PhD as “post project reflection,” the phase when the researcher reflections on the action and practice of the overall project (2004, n.pag). The ongoing reflections that emerge from the act of framing, and the discussions the activities foster, draw on the particular commitment in design-oriented research to hybrid activities that deploy the multi-modal expertise of the designer. ‘Reflection-on-research’ steps back further to engage in a reflective conversation with the overall research situation. The focus is more on evaluation-led reflection than speculation-led reflection, and leads the practitioner-researcher to an understanding of the research and how to communicate its potential. Scrivener has also noted the relevance of this reflection-on-reflection step as the phase when the researcher critically reflects on his or her reflecting (n.pag). The difference with Scrivener’s framing of all these steps is that he positions them sequentially, whereas this research approach promotes iterative reflection throughout the study.

Considering these tiers of reflection with respect to other approaches to research-through-design, it is possible to imagine a research practice that predominantly focuses on the activities highlighted in tier one and two. Some research degrees would not consider the final act of dissemination as a discursive or reflective act; it is more a moment by which to fix and assert the research outcomes. The third and fourth tiers – research-framed-reflection and reflection-on-research, respectively – identify the essential reflective conversations with the research situation that underpin design-oriented research. These reflective conversations are driven by the framing activities that define the inclusive and discursive nature of the reflective practice yet design-oriented approach I model in this PhD. I see this approach as distinct from other observation or theoretically-framed modes of enquiry that observe the designer in action; the process of reflecting on my own practice offers a new perspective.
4.3.2

Negotiating the Tensions of Creative Practice

A close examination of my case study design experience produces the understanding that in disrupting the everyday negotiations of designing, a researcher may open up a space for enhanced critical reflection. At the local level of enquiry, the conversations between the designer and the design, the situation and the research audience, are more direct and therefore easier to manipulate. For this reason, the experiential, situated practice of designing presents a useful research method by which to interrogate the academy’s understandings of design praxis. Close examination, in the case study, allows me to notice the tension the visualisation practice evokes. This tension is played out: first, by the material conversation between the designer and the conflicted visual language of a proposition diagram; and second, by the discursive conversation between the ambiguous artefact and the engaged audience. Even the analysis of the key characteristics of the transactional visual practice helps to direct me to what is transferable about the communication design experience. I have observed how the situated learning that comes from speculatively putting forward an idea is productively countered by the temporary fixing afforded by the diagram. In addition, I have realised that this speculative yet reflective approach to designing seems suited to exploring provisional content that resists definition and respects multiple perspectives. In learning the value of drawing stakeholders into the conversation, the visualisation practice also signposts the importance of how the designer frames and shares material to ensure a critical, discursive space for reflexive engagement.

In the model of design-oriented research put forward here, the tension of the research practice comes from the extensive negotiating required by the tiers of reflection identified above. The meta-reflective conversation with the overall research program is drawn to listen and respond to the back talk of the practitioner-researcher. To make attending to the reflective conversations that run between the designing, writing and framing exercises more second-nature for the designer-researcher, the reflection-based interventions are inflected with or understood in relation to a designer’s sensibilities. This makes it possible to enact reflection through the design-erly move of proposing a solution. Subsequently, this speculative orientation accommodates the practitioner-researcher reflecting on what he or she knows – not by focusing on what is already explicit, but by exploring the not-yet-explicit sides of his or her practice.
Design-oriented research seeks to trouble the push and pull negotiations of designing as a strategy to increase the occurrences and intensity of engaged reflective back talk. I underscore the term 'negotiate' to emphasise that it is more than just extending the amount of time the designer is engaged in the process of figuring out his or her next move. Protracting the design experience may result in the practitioner-researcher having a more sustained period of reflection, but just as importantly, the goal of ‘troubling’ the centripetal/centrifugal tension is to notice what is being negotiated. For it is at the intersections between the tiers of reflection above that insights advance from simply being noticed to being elaborated on and provisionally corroborated.

To disrupt how a designer regularly designs or researches is to draw attention to what is now a less familiar (and consequently more conscious) creative experience. Focusing on the core negotiations of practice that push and pull the designer to weigh up possibilities draws attention to the thinking-through-making space at the heart of design practice. This is the space where the designer will weigh many thoughts and possible moves as he or she proposes and evaluates the potential of multiple frames from alternative perspectives. Metaphorically, troubling the negotiations of practice appears to be about tuning into the stations that are broadcasting the reflective conversations of practice. Amplifying the back talk of a research practice appears to reference the need to turn up the volume so the chatter is harder to ignore.

Ultimately, these tiers of reflection are simply a framework by which to account for the rhizomatic, opportunistic and reflective conversations that ran through my research program. They identify a way to temporarily fix for discussion the activities and contexts that motivate the reflective conversation. In much the same way, the diagrams in this dissertation seek to provisionally define the productive tension of the centripetal/centrifugal exchange (fig. 7) or map the dualities that embody the negotiations of design practice (fig. 10). In design-oriented research, the academic literature similarly provides a series of critical frames for the researcher to try on. For example, the act of reworking Schön’s vocabulary, or considering how this research project lays over Dorst and Lawson’s typology of design activities, is a productive exercise if the practitioner-researcher understands these critical frames as new propositions to be critiqued and evaluated with respect to whether the ideas resonate with his or her experiences. Schön
describes how the ‘frames’ of design practice provide a reflective tool by which the practitioner can examine, by proposing, not just the problem at hand, but also his or her own practice (1983).

4.4 Framing the Potential:

A Provisional Conclusion

Dissertation Diagram fig. 17 (p245)
1. DESIGN-LED BACK-TALK
The internalised and verbal discussions that promote reflection on the process of designing and the insights disclosed by the design projects. Amplified by negotiating two drawing styles within the proposition diagrams.

2. RESEARCH-LED BACK-TALK
The internal and external discussions that negotiate the corroboration and validation of the insights disclosed by the overall research. Amplified by negotiating the reflective conversations of the research activities.

PRACTITIONER-LED RESEARCH

Amplifying back talk

This diagram highlights the back talk that narrates the reflective conversations of design-oriented research. In ‘troubling’ the centripetal/centrifugal forces the practitioner researcher is always negotiating, the model seeks to amplify the state of speculative reflection. Represented by orange spines, the back talk is responsible for animating and facilitating the discussion generated by and between the design projects and the research interventions.
Six years ago I did a research presentation where I talked about how I loved a passage in a novel that went from describing the flames in a fire to reminiscing about the flags that fly at a used car lot*. What I liked wasn’t the technical skill of the writer but the way I interpreted his tangential, personal recollection of the faded flags as an invitation for me to contemplate what I saw in the fire. I look back at that presentation and I am amazed at how little my ideas have changed. Still. Back then I only had a couple of words. Invitation. Reverie. Interpretation. There was no core thesis – only fragments of ideas. And yet, perhaps even back then I tacitly understood most of what I write here. That even then I knew that the practitioner’s voice did not have to match the theorist’s. Maybe I always knew that a role for the practitioner-researcher could be framed by opening up a speculation-led space for reflection. I probably even tacitly understood that the discursive, contemplative space the novelist and theorist seek out is distinct from the one the designer would propose. But back then I couldn’t have discussed it with you – I wouldn’t have known how.

Now I have more words. Figuring. Negotiation. Amplify. And I know how to put them together. There is still so much I can’t put into words. But that’s okay because six years from now I will have more words, more ideas.

* (Baker 2004)
4.4.1
Toward an Understanding of Design-oriented Research

The Emphasis on ‘Becoming’

Periods of design discourse have chosen to focus on being very analytical about the stages of the design process (the ‘research methods’ era in the 1960s, for example) and traces of this value system are still evident in the technical-scientific rationality of some fields where design researchers come from a more hard social science background. Yet it may be surmised that fixing the process of design was perhaps not the most appropriate subject for investigation, given the value system of a design practitioner (Coyne 2004). Even so, I have found myself throughout this research project making attempts to classify or categorise aspects of design praxis, since temporarily putting forward a position has proven, for me, a productive way to critique and examine the model under scrutiny. Still, I intentionally did not seek to make a case for design-led research with respect to theory construction.

Friedman can be read as patronising in his characterisation of designers who he derides as often confusing practice with research and criticises for their “misguided effort to link the reflective practice of design to design knowledge, and the misguided effort to propose tacit knowledge or direct making as a method of theory construction” (2003, p520). He asserts that taking this position is a dead end. I read Friedman’s writings as provocatively didactic in that he seems to enjoy setting up this divide between theory and practice, when this research is interested in the dialogue that engages theory with practice and practice with theory. Even as Friedman concedes that knowledge flows in both directions, you sense from his writings a belief that robust scientific knowledge of design will inform practice. In “Creating design knowledge: from research into practice” Friedman claims that:

The goal is a full knowledge creation cycle that builds the field and all that practise in it. Practice tends to embody knowledge. Research tends to articulate knowledge. The knowledge creation cycle generates new knowledge through theorizing and reflection both. (Friedman 2000, p13)

Yet, the paper title and conclusion point to his investment in how research will direct practice. My interpretation of Friedman’s position is that he is searching for theories of design that, in Rosenberg’s language, seek “to build intellectual substance by trying to ‘grasp’ design… [so] it can be operated on analytically” (2007). My bias draws me to consider how knowing might flow in the other direction but I am not interested in the scientific act of constructing design knowledge that Friedman details.
Friedman makes a case for why explicit articulation is central to how we contrast theories and share them.

The challenge of any evolving field is to bring tacit knowledge into articulate focus. This creates the ground of shared understanding that builds the field. The continual and conscious struggle for articulation is what distinguishes the work of a research field from the practical work of a profession (2000, p14).

As I increasingly came to recognise the possibilities-driven value of designing I began to value the discursive process of struggling to articulate more than I did the more analytical act of naming a fixed position. I agree with Friedman that it is “not experience, but our interpretation and understanding of experience that leads to knowledge” (p521) but I disagree with his interpretation of explicit articulation. Manzini stipulates that design knowledge has to be explicit, discussable, transferable and able to accumulate. Manzini qualifies his call for research to be explicit by saying that the knowing should be “clearly expressed by whoever produces it,” which is distinct from Friedman’s design science goal with its systematic knowledge and predictable results (p12). This research experience has led me to argue that it is possible to clearly express the potential of a practitioner’s insights while not presuming to lock in a specific interpretation of their value. What is of importance is the commitment to be explicit and open enough to ensure Manzini’s expectation that the knowing be discussable and transferable.

As a practitioner I have come to see the provisional nature of these critical frameworks as central to their currency. In this way my research study posits that the agency of a discursive, reflexive practice lies in appreciating that individual perspectives and background understandings should be subjected to constant negotiation and renegotiation. This allows tacit understandings to be examined and explicitly communicated for discussion without presuming that the initial explication is an attempt to fix a theoretical position. In fact, the ‘becomingness’ of figuring out new perspectives is central to a discursive act that acknowledges the appropriateness of leaving some questions unanswered… if not unexamined.

This chapter extrapolates from the case study, ‘proposing’ a model for design-oriented research in order to show-by-example how a practitioner might make a contribution to design knowing (in this case the discourse of design research). I recognise that this speculative approach is not constructing theory in the way Friedman is advocating for, yet I do see it as consistent with Manzini’s definition of design knowledge. I share Manzini’s interest in privileging how the designer-as-research would evaluate the appropriateness and relevance of the research by considering how useful it is
to those who design. In this way he defines design knowledge as something that has more than abstract utility but as:

A set of visions, proposals, tools and reflections: to stimulate and steer strategic discussions, to be applied in a variety of specific projects, to help understand what we are doing or could do (2009, p12).

According to Jonas, the main epistemological problem of the discipline is shaped by design being “about what is NOT (yet)” (2007, p200). The interventions of this research project have never sought to pin down exactly what the projects were proposing, nor taken a definitive position on design. I make the connection here to Scrivener’s insight that “this is because the creative process is one of establishing the conditions for the realization of what has not been seen before, not one of thinking the thing out in advance” (n.pag). The emphasis is on the ‘becoming’ of the insights: on attending to the shift in perspective or the process of seeking corroboration. This is why my research has sought to move ‘toward’ an understanding, and why it is engaged in figuring as opposed to having figured out. My decision to allow the research to be about potential calls for it to resist theoretically locking-in a conclusive position. Yet this is about more than just acknowledging the design practitioner’s lack of interest in what is known and what he or she cannot influence. With the object of study focusing on the process of designing and researching, I have been regularly reminded of experiential, philosophical and practical reasons why it is appropriate to attend to the figuring act of becoming. Even with the interrogation of my own tacit understandings, I have come to appreciate that it is more relevant to explore the process of examining my assumptions than to permanently account for my position.

However, the research project is motivated by the broader ambition to develop a model whereby the practitioner as researcher can inform understandings of design praxis. One of the core negotiations of this research project is the ongoing attempt to navigate the push of a discursive model that seeks out new interpretations and perspectives with the pull of a critical model that can analyse and substantiate the knowing of the research. This puts in perspective why the act of interrogating one’s practice seems to be an ongoing commitment rather than a discrete exercise.

THE CONVERSATIONS OF THE RESEARCH

This dissertation consistently alludes to the reflective conversations that run through the research. The emphasis is on the conversations between the researcher and the situated context of the research project, whether
that be at the level of designing a project or evaluating the direction of the research in general. However, the project could also be characterised as being in conversation with the work of Schön, Cross and Lawson. This research states from the beginning that its performative orientation resists the notion of theory led by practice, and yet as the research has evolved it is clear the extent to which the conceptual frameworks of this research build on the writings of these three theorists.

My conversation with Schön’s work on reflective practice is obviously the most immediate. Practitioner-researchers regularly cite Schön’s work as a way of legitimating their reflective practice. Scrivener’s recognises this connection for practitioners by noting the value of reflection with respect to studio practice:

• “There is a positive relation between productive excellence, i.e., innovative artefact production and reflective practice;

• Reflective practice is a productive mode of personal creative development;

• Reflective practice yields practitioners who can give accounts of their work, which, e.g., explicate overarching theory, appreciative system and the norms used to evaluate the unintended and unexpected consequences;

• These accounts are a valuable resource for other practitioners and interested parties: providing, amongst other things, ‘examples, images, understandings’ (Schön, 1983:138) and strategies for action that other practitioners may employ to extend their own repertoires;

• Reflective practice equips practitioners to induct novices into that practice” (2007, n.pag).

In relation to the extensive body of scholarship that draws on Schön's work, I understand the contribution of this research as directly examining, from a practitioner’s perspective, the ideas that Schön came to as an observer of design practice. I do not see this work as a critique or departure from the key ideas Schön posits, but as offering an insider’s perspective on how his ideas might be ‘tried on’ and explored in the context of individual research practice.

I do think that Schön overstates the reflective orientation of design, which is interesting when considered in the context of the literature on expertise. With reference to Dreyfus and Dreyfus’s research into stages of skill acquisition Young and Spencer consider the implications of associating mastery (high level expertise) with the ability to perform without conscious attention to the act. Wondering whether ‘mastery’ would deny the possibility of deep reflection by the design master Young and Spencer come at this from another angle by questioning whether “the real achieve-
ment...is the [expert designer’s] ability to reframe the overall activity in such a way as to create a challenge” (p155). Here their proposition is similar to my argument for amplifying back talk, as they question whether this reframing would productively require the designer to maintain a commitment to reflection-in-action. My counter to Schön’s emphasis on reflection is to offer the more nuanced notion of speculation-led reflection. In positioning the relationship between reflective practice and design research this research simply adopts Schön’s notions of framing, repertoire and reflective conversations. The contribution of this research to this field is the notion of amplifying the back talk of practice to access a deeper level of reflective enquiry. My proposition of why and how a designer-researcher might do this offers a strategy for generating rich practice-led observations that can inform the scholarship of design research.

My conversation with Cross is more complicated. This dissertation would have been infinitely more difficult to write if I had not read Cross’s scholarship about the cognitive expertise of designers. On the one hand, I could flippantly say that when I read Cross’s descriptions he was only putting into words what I already knew — yet I now recognise the sheer importance of accounting for the expertise that designers often only tacitly know. So I could describe my relationship with Cross superficially, as if the primary merit was the vocabulary his scholarship offers. Yet, more than that, Cross’s scholarship has motivated me to want to contribute. The subject this research seeks to investigate shares a domain with the field that Cross has shaped. The disciplined conversation Cross refers to is the subject I also wish to explore, as I set out to better understand design expertise, designerly knowing and design thinking. Yet Cross and I have a fundamentally different methodological orientation to the discipline of design. This helps to explain why the methods and assessment of the research Cross cites seem at times to dismiss the values and perspectives a practice-led approach would bring to this subject. So even though his work directly engages with the conversation I want to be a part of, his singular praise for protocol studies does not seem to promote his own interest in recruiting more practitioners to engage with research. I feel a productive ambivalence toward his scholarship: I am grateful for the terrain he has mapped and frustrated by how transparently it signals my sense that the practitioner is absent from the scholarship that defines the domain of design. I would see my theorising about the negotiations of practice and the concept of speculation-led reflection as simply framing in a different way many of the ideas Cross has already articulated. But I see that my contribution to the discussion of design expertise could be valuable with respect to the diagrams in this dissertation. For as insightful as Cross’s scholarship is at accounting for designerly ways of knowing, I believe my diagrams potentially present a more
appropriate way of engaging the practice community of academics into a conversation about designerly ways of knowing.

If I were to imagine I really was in conversation with these three theorists, then Lawson would be the person I most appreciate talking to. It is not the ideas behind Lawson’s scholarship that I am responding to, but the orientation of his scholarship that I respect. Whereas Cross gives the impression of writing for other design theorists, Lawson makes it obvious that he is writing for the design practitioner. His commitment to communicate what is often unspoken in design education and to ensure that the scholarship be accessible to students and educators alike aligns with many core ambitions of this project – albeit tackled from a completely different perspective. With every new book, Lawson attempts to find new ways to ensure the practitioner’s voice is heard – with repeated quotes throughout the text. I perceive the anecdotal entries at the beginning of the sections in this dissertation as presenting the kind of critical first-person observation of practice that Lawson integrates into his scholarship. With respect to how we share and communicate complex notions of design praxis, I see that my research seeds the possibility of the practitioner-researcher being more than just the voice in pull quotes. My research foreshadows, the potential for publications, such as the model of *Architectural Design Research*, that frame practice-led perspectives of design praxis through designing and writing (Allpress and Otswald).

### 4.4.2 The Transferability of the Model

**SUMMARY OF THE MODEL’S CHARACTERISTICS**

One way to conceptualise the design-oriented research model presented in this dissertation is to characterise the design projects as the push to the unfamiliar and the reflection-based interventions as the pull to what we know and what we can build upon. In this way, a design-oriented approach to research values the speculative space of exploring through the process of designing and the reflective space of provisionally fixing into words the practice insights so they can be actively discussed with peers. This is a multifaceted approach to researching praxis that calls for a rigorous level of reflection, confession and candour, yet never strays far from its practitioner roots.

The following briefly summarises the key attributes of the design-oriented research model that emerged from this study. The attributes draw atten-
tion to how the designer thinks, practices and acts, and are intentionally connected to the three frames introduced at the beginning of this chapter.

The first set of attributes focus on the way a designer-as-researcher thinks. Namely these attributes of the model are built on notions of design thinking, specifically as it is manifested through amplified reflection, creative negotiation and explication of previously tacit knowing. The common element within this set of attributes is study’s commitment to reflection. To think like a researcher, this approach not only requires the practitioner to be more attentive to the back talk from these reflective conversations, but also calls on him or her to externalise what is for many designers an internalised dialogue.

The second set of attributes focuses on how a researcher practices. Committed to the relevance of supporting designerly ways of knowing the foundation for design-oriented research needs to build a model with methods that are appropriate for a practitioner-researcher. The primary method may be design practice, but the model relies on an approach that allows the designer to work iteratively, switching between multiple modes over an extended period of time. The discipline of noticing supports the close reading of practice, and the action research cycle ensures a form of engagement that promotes change and the need to revisit and redirect a project as new understandings emerge.

The third set of attributes specific to the model is related to how a researcher acts. The integrity of the design-oriented model builds on the integration of speculative and reflective methods, allowing the co-evolution of the research problem and potential propositions. The design projects are the primary locus of activity, and the social contexts of multiple practice spaces can further consolidate the feedback loop between the researcher and his or her peers. The model addresses the importance of observing practice from outside of designing by introducing a speculative element within the reflection-based interventions.

These integrated sets of attributes begin to illustrate what is distinctive about my approach to researching. The reflection is integrated within and sustained by the entire research program. My practice-led projects intentionally manipulate a designer’s propensity for projection – to dive deeper into the examination of the situation. The inclusion of reflection-based strategies introduces various methods and research artefacts to intensify the interrogation of the insights that emerge. My commitment to explore our understandings of design from a practitioner’s perspective led my research methods, where possible, to being adapted to work with the agency of design and the expertise of the designer. These hybrid methods – part design-led and part reflection-based – predominantly fall into the framing category of the research study. The commitment to embedding reflection
in all phases of the research and the development of the hybrid framing exercises together define this design-oriented approach.

In this model the reflective conversations can be characterised as the central nervous system of design-oriented research, requiring the practitioner-researcher to recognise that for every activity undertaken there are reflections sparked, messages sent and connections made. Such a research approach requires the designer to become conscious of the negotiations when designing and to recognise the value of his or her expertise.

THE PRIMARY PROPOSITIONS AND KEY UNDERSTANDINGS

My model has been conceived to provide an approach for the reflective practitioner motivated to interrogate his or her own practice – with the goal of translating the insights that emerge from practice into a broader discussion of design praxis. The rationale for my project broadly frames the desire among practitioners within the academy to participate in and help direct the academic discourse that surrounds the domain of design. With the project broadly focusing on the importance of designers being more cognisant and articulate about the expertise they bring to a situation, my research specifically explores the potential for design-oriented research to investigate a practitioner’s tacit understandings of practice as a first step toward being able to make explicit the agency of design.

To this end the characteristics of the design-oriented model describe how the designer educator might use the inherent attributes of his or her studio practice to enhance reflective research practice. The ways a designer proposes, makes and reflects have all contributed to shaping my model of practitioner research. The multiple-method and multi-modal character of design-oriented research is a direct consequence of the solution-proposing nature of designing and the material expertise of the practitioner.

When stating the research questions in chapter 1.3, I acknowledged that the various components of this research project addressed these questions by attending to the domain being investigated (reflective practice and design), the methodological orientation (design-oriented research) and the community of practice (design education). The following table, with reference to these components, summarises the principle findings of this study by acknowledging how practice insights framed research questions that led to design propositions and ultimately transformed my own understandings.
**DESIGN-ORIENTED RESEARCH**

**Practice / Research Insight**
I noticed the extent to which the design-oriented research approach that emerged was founded on new understandings posited by the visualisation practice of figuring.

**Tentative Thesis**
This observation establishes the capacity to translate specific communication design insights into perspectives that inform a broader conversation about design praxis. The thesis came to focus on the discursive internal and external conversations between the situated case study and the meta argument of the thesis. This framed the research question: how might design as a research method interrogate the often only tacitly understood praxis of design?

**Design-led Proposition**
From this thesis the propositional model of design-oriented research emerged. Cornerstones of this approach include a commitment to: speculation-led reflection, hybrid framing activities, the negotiative capacity of the designer and amplifying the back talk of practice.

**New Understanding**
I came to understand that it is counter-productive to pit research into design against research through design. It is more interesting now to think how the two methodological orientations might come together to improve our capacity to build theories of design.

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**DESIGN & REFLECTIVE PRACTICE**

**Practice / Research Insight**
I noticed that the speculative yet reflective practice of figuring the visualisations led to a prolonged yet critically productive creative process.

**Tentative Thesis**
This led me to consider whether in adopting designing as a research method it can be constructive to intentionally trouble the negotiations of the design process as a strategy for sustaining an active level of critical reflection-in-action. This framed the research question that explored: which additional methods and strategies might encourage a practitioner to more deeply reflect on and share his or her understandings of design?

**Design-led Proposition**
From this thesis the critically reflective back talk of design became the driver behind design-led enquiry. With a commitment to amplify not just the back talk of practice but also research-framed reflection the model came to propose the merits of stepping outside of the practice experience to interrogate a designer’s understanding of practice.

**New Understanding**
I came to understand that although designing can illuminate some practice insights there are additional tiers of reflection required to analyse, challenge and translate those practice insights. I now appreciate that reflecting on my practice from ‘outside’ of the project focus can build different noticing expertise while maintaining a designerly orientation.
Rather than being prescriptive, the design-oriented research approach outlined here intentionally speaks to the principle of the model. This invites the practitioner-educator to potentially customise an approach that would build on his or her personal strengths. I can only speculate as to whether the model really has the potential to increase the capacity of the practitioner-educator to represent his or her perspective in scholarly conversations about design. However, I can account for how the understandings I have of design that inform this thesis are almost all a direct consequence of undertaking this research. The many hunches with which I began this project have been slowly overturned, and I find myself completing this dissertation able to declare many positions about design practice that I once only tacitly understood. Being cognisant of my own expertise as a designer has significantly changed the way I contribute as a teacher and academic administrator. The following presents specific examples of how these new-found understandings have changed my perspective.

Knowing how I might navigate a new situation has enhanced my capacity to draw on my design expertise in interdisciplinary settings. Specifically, I have observed that in collaborations I am articulate about how I can contribute and comfortable with defending my speculation-led reflection approach to situations.

Having a vocabulary for articulating a designer’s expertise has allowed me to assert a practitioner’s perspective in theoretical conversations about design with respect to future curricula. This was of particular relevance in discussions when the degree program did not fall under the domain of any

**Practice / Research Insight**
I noticed that my ability (or not) to expressly articulate my understandings of design praxis influenced my capacity to engage colleagues and students.

**Tentative Thesis**
Concerned with designers’ being better equipped to communicate what they bring to collaborative projects the project set out to explore research strategies that could interrogate tacit understandings of design while also challenging a practitioner’s base understandings. This line of enquiry led to the research question of how research into the practice of design might better reflect a practitioner’s perspective, expertise and motivations?

**Design-led Proposition**
From this thesis emerged the multi-modal, discursive approach that support a researcher translating and extrapolating from his or her situated engagement with practice. With a focus on the shifts in modes and context that promote opportunities for shared articulation the proposition emphasises a critical framework for the research that includes: dual practice spaces and the triangulation between designing, writing and framing activities.

**New Understanding**
I came to understand how the conversations of practice play a critical role in facilitating the negotiations of design. This offered a way for me to respect how designing, writing and framing offer complementary strategies for translating and narrating practice insights.
one field of design (i.e. a PhD in Design and an MFA Transdisciplinary Design). I could extrapolate from my communication design experience and articulate graduate attributes while still acknowledging the primacy of the design project.

Being able to propose a critical framework by which practitioners can understand their potential role as researchers has directly informed the research culture of my institution. Perhaps the most instrumental shift is the use of this model as a basis for workshops for faculty and courses on design-led research for students. The research model appears challenging and the orientation relevant enough to motivate faculty to consider the transition from practitioner to researcher.

Perhaps most significantly, the deeper understanding I have of design expertise and how to use these attributes to promote critical reflection has transformed not just how I think of the content of design education, but also how we should go about teaching. I recently taught my first ever theory course and the students were very responsive to the inclusion of proposition diagram assignments as a speculation-led reflective strategy for their theory course.

LIMITATIONS AND RESERVATIONS ABOUT THE MODEL

I intentionally refer to a tentative thesis and a design-led proposition, as the research model I put forward essentially exists in the realm of potential until other practitioner-educators examine and explore the approach for themselves. However, it is worth noting the limitations of a model that presents the negotiative process of reflective practice research in design as essentially a tug of war between opposing forces. The following acknowledges the real challenges of negotiating the ‘back talk’ between the designer and the design, the research audience and the situation he or she is designing into.

The first reservation is concerned with skill and inclination – specifically whether this approach is an ‘appropriate’ fit for all designer educators. This reservation is related to the capacity or openness of the researcher and the audience to be deeply reflective. The process worked for me, and I believe worked for my peers who chose to actively engage with the challenge of internally reflecting on their biases and assumptions. Yet for the audience members who sat silently it was less clear to me whether they were introspectively examining their own understandings or simply passively observing the negotiations. I also recognise that I am inclined toward reflection, and so am drawn to the discipline of noticing. However, it is clear that the reflective-practice orientation of this model would fail to resonate for designers not interested in the core objective of interrogating their own practice.
The second reservation is less about capacity and more a criticism of the recursive nature of the model. The iterative reframing of the research subject and the sometimes-overwhelming negotiation of multiple approaches and practice spaces resulted in the project taking many turns and arguably extending its duration. You could argue that amplifying the back talk created too much chatter to meaningfully respond to. There were times when the opportunistic capacity to redirect the research was invaluable, yet conversely it never seemed an efficient way to research. The iterative, situated nature makes me question how relevant the model would be for addressing a clearly defined research question.

For most of the research project I was only tacitly deploying the model that is articulated here. I can speculate that some of the reservations might be addressed by reducing the perception that each new insight was critical to explore. I noticed that once I more explicitly understood the pitfalls and potential of the multiplicity approach, I was able to make more strategic decisions about when and how to pursue new insights. Now that I more explicitly understand the potential and limitations of the reflective approach, it would seem constructive to more thoughtfully structure the reflective conversations with the self and with others. Over time I became more disciplined in my own internal conversations – in how I structured the back talk – but I am not sure how much this discipline came from practice or an explicit understanding. By intentionally diversifying strategies for reflection and discussion it would be possible not just to access new personal insights but also to better facilitate the discussions with peers. Shumack’s paper potentially provides an approach for structuring conversation with the self as other “with the aim to introduce new thinking about diverse viewpoints and points of consent or disagreement” (Shumack 2009, n.pag).
I had noticed before that there was never an ideal time to stop this project. By the time I finished the latest round of diagrams I had more I wanted to write about, then after further reflection I had more designing I wanted to do. But this time I really had thought the design work for my PhD was done. I had three visual essays and three visualisation studies, and I did not need any more experiences to reflect upon. The way I saw it reflection time was over. It was now time to just get on with finishing my dissertation. Still, what I didn’t realise is what I could still learn from writing. The new understanding I was applying to my work was a direct consequence of academic writing. I had to concede that even as the PhD was coming to a close, my professional practice was still moving forward. Even if I tacitly recognised that the research situation mirrored the recursive, iterative experience of designing, I still basically saw the meta-research process as more linear. I had to start thinking of the bigger picture.

It was time to recognise that the dissertation will get written; the PhD will get examined. Yet, new perspectives, new knowing, will ensure the research need never pretend to be fixed and done.
4.4.3 Possibilities for Future Research

Moving on from the concrete observations of how design-oriented research might operate, these concluding remarks consider the potential this model presents for future research.

The methods frame calls into question the way researchers from other design fields would adapt the research interventions to align with their particular material expertise. The visual orientation of this research illustrates how diagnostic diagramming or the visual/verbal interplay of a presentation are productive, but it would be valuable to see the insights that might come from an architect: for example, adapting a reflection-based intervention to accommodate his or her spatial expertise. With respect to research by non-practitioners, it could be informative to have qualitative assessments of the kinds of insights generated by the acts of designing, writing and discussion. Better understanding the contribution of the different activities might inform the practitioner-researcher about when and why to use specific research methods.

The integrity frame emphasises the hybrid modes and discursive nature of visually and orally communicating the research. It would be interesting to observe how practitioners from other design fields would adapt this notion of multi-modal framing exercises – beyond the examples of diagnostic diagrams and the predominantly graphic nature of the presentations I designed in relation to my background. Beyond the idea of different expertise in visualising and communicating content I can imagine different modes of driving discussion: for example, a more participatory approach to the design process, and/or working collaboratively. The social interactions of these approaches might also be investigated to evaluate their potential for ensuring ongoing corroboration and consultation of the insights that emerge.

The reflection frame also brings into question how figuring would manifest itself in other design fields. By extrapolating the negotiations of figuring with respect to creative practice in general, one can begin to imagine how another design field might challenge the creative tension of studio-based practices. This research might provide a framework by which to create similarly discursive artefacts for practitioner-researchers interested in critically interrogating their own tacit understandings of practice and perspectives on design. From a completely different perspective, it could prove informative to consider how a social scientist would go about corroborating (or not) the outcomes of this research. Protocol analysis might disclose interesting observations about how and when understandings emerge in
a research program designed specifically to amplify and externalise the reflective back talk of practice. Similarly, qualitative research could evaluate how effective or ineffective the intentionally discursive process of corroborating insights is for engaging a research audience into reflecting upon their own understandings of design.

For my own practice, I hope to build upon and further refine the toolkit of research activities that work to my expertise and sharpen my critical reflection. I spent too much of this project being simultaneously wary of the limitations of design-led reflection-in-action and dismissive of evidence-based research that ignored the designer researcher’s expertise. I am no longer interested in this binary tension and have come to respect the multiple types of knowing different research orientations offer. If as a community of educators we can come to understand how productive it might be to talk across the different disciplinary orientations that contribute to research into design, then we might come to respect how theories of design would be enriched by a diversity of methodological perspectives.

I found the intensity of my model to be an excellent training ground for refining my own discipline of noticing, but I am now curious to investigate a subject other than my own practice. Even with this shift in research subject, I maintain my interest in exploring how qualitative methods can be appropriated to work with a designer’s expertise. At the end of this dissertation I find myself less interested in advocating for one kind of research and more motivated to consider how ethnographic insights, clinical trials, philosophical arguments and conceptual models can collectively propose not only what design is but transform what design might come to be.
EPILOGUE –
Post-project Reflection

I am compelled to write this epilogue six months after I submitted my PhD for examination, because I feel that distance from the project allows me to give a concrete example of how the research project has changed my professional practice and how this has subsequently led me to question my privileging of reflective practice.

In preparing material for my oral examination I looked back to my initial review of candidature when I first entered the PhD program. As I read the statements I presented nearly eight years previously I was struck by how they imply that I tacitly understood some of the key insights that the case study went on to disclose.

The first sequence of phrases began with: I like contradictions / I like putting ideas in boxes / I like when they don't fit / I like thinking of why. These self-reflexive observations show a nascent understanding of the idea that there is a core tension within design practice and that I recognise this as a productive, engaging tool for reflection. I then went on to say: I like ambiguity / I like sitting on the fence / I like that there are more than two sides to every story / I like learning from talking. It would be another five years before I would explicitly come to recognise that the visual language of the proposition diagram succeeds in amplifying the back talk of design because it is intentionally ambiguous. But on some level these words forecast the possibility of a multi-modal approach to research where multiple perspectives are valued for their capacity to create the discursive environment necessary for deep reflection.

If I look back at a book chapter I wrote the month I enrolled in the PhD program I am struck by how I struggle to articulate the design process as anything more than a serendipitous process. I didn’t know about co-evolution of the problem and solution, and back then I would have turned my back on Cross’s criteria for research rather than engage in proposing a redefining of the criteria by arguing for how design praxis could be accommodated. I make these observations because the move from tacit to explicit understanding begins to address the question of whether this research has informed my capacity to lead academic conversations about design. I can say that I no longer relate to the tongue-tied practitioner I describe in the initial reflective account that introduces this dissertation.

This transformation in my practice is most evident in a project I worked on soon after submitting my PhD. I was co-convenor of a conference on PhDs in Art and Design in a country with no history of practice-led PhDs.
The experience was empowering because it demonstrated how my capacity to articulate a position on practice-led research allows me to a) facilitate conversations between the design philosophers and the design practitioners; b) ensure that the designer’s voice is not marginalised in the PhD conversation; and c) motivate studio-based faculty to consider the contribution they can bring to a research context. But the experience was also enlightening because the conference planning and discussions helped me to see how my bias had led me to simplistically pit practice against theory, situated knowing against abstract knowing. I have come to respect that there are project-grounded ways to practice being a design-led researcher that need not revolve around reflective practice, protocol studies or design philosophy.

With few practitioners’ voices represented in the discourse surrounding theories of design praxis I had not paid enough attention to the community of practice-based researchers actively working on applied projects. The model at the institution where I was a PhD candidate had led me to focus on the designer-researcher who sought to advance the sub-field of design by way of reflecting on his or her own professional mastery. I should have focussed more on design researchers who work in interdisciplinary collaborations since this community has already established methodological approaches that respect the practice expertise of the designer while allowing the assessment component of the research to be evaluated by other measures.

I find it hard to get past a general desire to advocate for design-oriented research, but I now found myself less invested in asserting the emphasis on reflective practice. During the PhD conference I found myself not pushing for a practice-led PhD pathway, but for a thematic curricular model that allows researchers from a diversity of epistemological orientations to be explore research topics alongside one other. This research experience has taught me to recognise the limitations of design and to acknowledge the reflective insight that can come from stepping outside of design. For even though the research is grounded by the projects, and the propositions did emerge from the situated investigation — the design projects alone could not achieve the central purpose of the research to generate new knowing about design in general. My practitioner’s appropriation of the discipline of noticing worked because it relied on interventions that called on me to step outside of the immersive process of designing. In listening not just to the back talk of designing, but also to the back talk of researching I have come to appreciate how (perhaps, not unsurprisingly) I learnt as much about designing by appropriating reflection-based research methodologies from other disciplines.
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