

**Roadblocks, detours, dead-ends and thoroughfares: Creating a road map to  
navigate through the research methodology labyrinth**

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### **Abstract**

Creating the theoretical framework, conceptual tools and design of a doctoral research project is a very complex undertaking. The intent of this paper is to help to demystify the process and give some practical guidance for new researchers in order for them to avoid (or overcome) obstacles and minimise the time and effort required to complete their research proposal and thesis.

When starting out on my doctoral research odyssey, a labyrinth of potential research methodologies confronted me. Finding a way through this labyrinth to complete my journey (doctoral thesis) seemed to be a daunting task. This paper describes the iterative processes I used to create a road map for myself to help me navigate through the plethora of research methodologies available when conducting educational research. To progress in my journey I had to negotiate roadblocks and detours and learn how to recognise when I was heading toward a dead-end and needed to back track in order to find a thoroughfare to my destination.

The theoretical framework I used in my doctoral research was the sociology of innovation theory or actor-network theory (Latour, 1987; Law, 1992). ANT is also referred to as the sociology of translation (Callon, 1986).

Roadblocks were incidents such as my principal supervisor and methodology specialist moving to another university. Detours were episodes when I digressed in my reading or in my thinking or both. Sometimes this was on purpose in order to understand a key concept; at other times I had wandered off on a tangent. Dead-ends were occasions when my reading didn't help me to move forward in my thinking. One technique that I found helpful to assist me in overcoming the roadblocks, returning to the main road after a detour or spotting a dead-end was to take a helicopter ride to move above the roadway and the traffic and to view the research landscape. This allowed me to put my doctoral research into perspective and view the thoroughfares (the theory, research methods and techniques which would allow me to answer my research questions) that would lead me towards my final destination – the completed thesis!

### **Introduction**

In Greek mythology Theseus was the hero who entered the labyrinth of intricate corridors at the palace of Crete, slayed the Minotaur and found his way out again. The Minotaur had the head and tail of a bull and the body of a man and caused much terror and destruction on Crete. Ariadne was the King of Crete's daughter. She fell in love with Theseus and promised to help him find a way out of the labyrinth if he promised to marry her. When Theseus did so, she gave him a sword to kill the Minotaur and a simple ball of thread. She instructed him to fasten one end of the thread close to the entrance of the labyrinth and as he made his way through the labyrinth to unwind the thread so that he could follow the thread to find his way out again.

I view the plethora of research methodologies as my labyrinth and the Minotaur as a synthesis of all the risks, dilemmas and obstacles in the path to completing my doctoral thesis. After starting my doctorate I quickly became lost in the research methodology labyrinth and at times felt that I would never be able to overpower the Minotaur. This paper is a personal account of my journey through the research methodology labyrinth and how I overcame the risks, dilemmas and obstacles in my path in order to complete my doctoral research. It could be said that the story of Theseus and the Minotaur is a story of how a simple tool was used to conquer a horrible beast. I hope that like Ariadne I can give you some simple tools to use like a sword to help slay the beast and a ball of thread to help you find your way back to life post-doctorate.

I begin this paper with a description of my reasons for doing a doctorate and give a brief introduction to my theoretical framework, actor-network theory. This is followed by an account of how I created a road map of research methodologies and the navigators who oriented me. I conclude with a discussion

about the risks and dilemmas faced by doctoral students and how to create a 'ball of thread' to assist students if they get lost on their journey.

### **Context**

I believe that each of us has a unique background and experience that influence who we are and what we do. From this we have developed our own philosophies, theories and conceptual frameworks that impact on all aspects of our lives including our research. Often it is difficult to describe these philosophies, theories and conceptual frameworks, as they are a part of what makes you the person you are, and they are not necessarily described in the context of formal theories. There are times when we need to state our philosophies, theories and conceptual frameworks in order to clarify why we choose to do something in a particular way. Therefore, I will provide a brief description of my journey as an academic at a multi-campus, regional Australian university and describe my motivation for undertaking a doctorate and why I chose the research problem I have studied (some of the following material is based on an article I wrote for the *Journal of Rural and Regional Education* [Luck, 2003]).

When I was appointed as a lecturer in 1987, I was given no instruction in teaching methods or educational theory or in the use and availability of any educational technologies. Hence I adopted the teaching strategies of, and used the same educational technologies as, those lecturers whose teaching style I had preferred when I was an undergraduate student. The educational technologies available to me in the university classrooms were fairly limited: a blackboard or whiteboard and an overhead projector. There was a limited number of television sets and video players, slide projectors and screens available to staff in the University if they ordered them from the educational media section of the library. There was very limited access to computers. Even though my teaching area was in Information Systems I was not given access to a personal computer.

A significant aspect of my teaching philosophy is that I regard myself as a reflective practitioner (Schön, 1991). After each class I like to think about what went well and what aspects could be improved and I try to journal these thoughts so that they can be incorporated into my future teaching. When thinking about my teaching I take a systems view, as there are many factors at many different levels that influence teaching and learning, and these factors are all strongly interrelated. Therefore I believe that we cannot focus on one aspect of teaching and learning without keeping in mind the total context of the learning environment (and beyond!). It is fairly typical during these reflective periods that I realise that the technology is driving, when it should be supporting, the teaching and learning.

In 1997 Central Queensland University (CQU) designed, developed and implemented interactive video-conferencing (IVC) as a delivery method for teaching across CQU's Central Queensland based campuses: Bundaberg, Emerald, Gladstone, Rockhampton and Mackay. Despite attending all the training that was available to me before using the IVC facilities for teaching and learning and my ten years of experience as a lecturer, my very first lecture using the IVC facilities was the most stressful lecture I had ever given. The training had prepared me for some of the technical aspects (such as which button to push to select the document camera or the computer or the lecturer camera) but it had not prepared me for being the producer, director, camera operator, sound and video recorder, writer and performer in the one-person television show which my lecture had become!

In response to very limited training when the facilities were first implemented some of the users experimented with different techniques and teaching strategies until they found a way of teaching that fitted their content areas and teaching styles. They were constrained by the decisions made before implementation because the video-conferencing rooms were designed and built to replicate a tiered classroom such as those used for face-to-face teaching with the addition of cameras, microphones and television monitors. The more innovative lecturers found themselves constrained by the fixed nature of the furniture in the video-conferencing rooms. Other lecturers did not adjust their teaching strategies at all, while some rejected the technology altogether.

Throughout my career as a lecturer I had been interested in the use of technology to support teaching and learning. My personal experience with having to adjust my teaching strategies to use the IVC

effectively for teaching and learning led to me to enrol in a doctorate where I chose to research the design and implementation of the IVC facilities at CQU. The main focus of my research is how staff development in the use of this technology for teaching purposes has been conducted and how effective it has been.

The IVC network at CQU is a complex system made up of technology, such as video cameras, monitors and electronic cables, and people, such as students, lecturers and technical staff. To study it I needed to find a methodology that would allow me to take into account the social and technical aspects of the IVC facilities. The methodology I chose was based on the principles and methods of actor-network theory (ANT). A brief overview of ANT is given in the next section.

### **Actor network theory**

ANT had its beginnings in the work of Callon, Latour and Law (Callon, 1986; Callon & Latour, 1981; Law, 1986). I have chosen to frame my study using actor-network theory because an ANT informed study would attend to both the social and the technical dimensions of this innovation. I argue that it will produce a better understanding of the ways in which educational technological innovations are implemented and used than that provided by other theories of technological innovation such as diffusion theory (Rogers, 1995). ANT is a conceptual framework and a set of principles and methods which can be used to examine the creation and maintenance of networks of associations amongst human and non-human elements, which, in the case of the IVC facilities (at first view), includes people, organisations, video cameras, television monitors, microphones, furniture, room design, software, computer and communications hardware and technical infrastructure.

Actor-network theory draws attention to issues of network formation and maintenance. It framed the methodology that I used to study and analyse the alliances and networks built up by the lecturers, students, technicians and technology involved in the implementation and maintenance of the IVC facilities. ANT acknowledges the importance of studying network associations rather than just the actors themselves. ANT is concerned with the interactions between the actors and the network and how actors translate or transform other actors, that is, how do actors persuade other actors in the network to change their roles within the network. ANT sees that attributes often assigned to actors are really the effects of the network or assemblage. In the case of the IVC facilities the process of redefinition in which the IVC facilities sought to impose definitions of use on others; and in which they 'interested' other actors and enrolled them to follow the facilities' interests, thereby becoming indispensable to the users of the IVC facilities; are fundamental aspects of my doctoral study. As an example, because the lecturer cameras in each of the IVC teaching rooms are fixed to the ceilings and can be moved only by the lecturer using the arrow keys on the control panel, it forces the lecturers to stay near the podium if they want to remain on screen. This means that how the lecturers move in the IVC classroom is governed by the limitations of the technology.

Now that I have given a brief description of the context and conceptual framework of my study I will now discuss how I created my road map of the methodologies.

### **Creating a road map**

If I wanted to drive from Rockhampton to Melbourne I would first consult a road map of Australia to allow me to see which are the major highways I could take and give me some idea of distances between the two cities. When I was close to the outskirts of Melbourne, I would put away the road map and open up a street directory of Melbourne. The finer detail of the street directory would allow me to find my way to my ultimate destination within the city of Melbourne. In this section I am using the analogy of a road map as an artefact that could be used to describe the lay of the land with respect to research methodologies and show the links among and within research methodologies. The street directory analogy will be used to describe the methods and techniques used within a particular methodology.

I did not have any educational qualifications before starting my doctorate so I felt like a visitor to a foreign land. When I told my first supervisor that I wanted to do my doctorate in the area of

educational technology in higher education, in particular the use of the IVC facilities for teaching and learning, but did not know exactly how I to go about that study, she told me to read for six months and work out exactly what research problem I wanted to study and how I wished to research it. I felt like I was on a roundabout with no exits! Looking back on this wasted time I know how valuable it would have been for my supervisor to give me more direction in my reading. Given that I had indicated that I wanted to do research on my teaching, which was in higher education, getting me to start my reading with a book on research in higher education such as Light, Singer, and Willett's *By design: Planning research in higher education* (1990) would have given me an indication of the journey I needed to undertake. Another helpful tool would have been to read a book that gives a good overview of research paradigms or approaches such as *Researching education: Data, methods and theory in educational enquiry* (Scott & Usher, 1999). The book that eventually gave me the basis of my road map was a book by Renata Tesch (1990): *Qualitative research: Analysis types and software tools*. In the first section of this book she describes qualitative research, in particular how it is used in Sociology, Psychology and Education, and she draws diagrams to show the reader how each of the methodologies relates to one another and what methods or techniques are used for data gathering and analysis within each methodology. I have added to this road map and constantly refer to it when I am reading research articles. I use this road map in two ways: to help me judge the internal coherence of the research (did the author show a logical link among the research paradigm, methodology and methods or techniques that they used?); and to show me graphically where the research fits into the landscape of research methodologies. Using this road map is like taking a helicopter ride over the research methodology landscape. It helps me to orient my own and others' research.

The next step was to create the street directory for my own research methodology. ANT is a fairly recent conceptual framework and even the originators of ANT disagree about exactly what it is and how it should be used in research (Callon, 1999; Latour, 1999a; Law, 1999). Therefore after determining that ANT was an appropriate conceptual framework to use for my doctoral research one of my first challenges was to determine exactly what I needed to do with respect to the research methodology. There is no textbook on ANT that tells one how to go about conducting an ANT study. This was a significant roadblock when I started to design the research plan. There are books and articles on ANT that discuss the ontological stance, methods and principles that underpin ANT but they give limited guidance as to how to conduct ANT research. The ontological stance of ANT is that reality can be constructed only through synthesis and putting science back together as an integrated whole, rather than taking it apart (Latour, 1999b). One of the basic methods is to "follow the actors" (Callon, Law, & Rip, 1986, p. 4) and a fundamental principle is the principle of generalised symmetry (Callon, 1986). As can be seen, this is not a classical research methodology!

The way I created my street directory was to find other doctoral theses that used ANT as a theoretical framework and as a research methodology. I would read through their conceptual framework, methodology and design chapters and then think about how I could adapt the methods and techniques to my own study. Often they would point me towards relevant articles and books that used ANT as a methodology. I would then write down my thoughts and talk to my doctoral supervisors about these methods and techniques as to their suitability to my research. Using their comments I would go back and rewrite my chapters on methodology and design. This was a very iterative process and took some months before I was happy with my research design and felt confident that my conceptual framework, methodology and design were internally coherent and would provide me with the necessary data and appropriate method(s) of analysis to address my research questions. The end results of my deliberations became Chapters Three (Conceptualising the Study) and Four (Designing the Study) of my thesis.

I am by nature a very practical person and found it difficult to read and write academic papers. I found this to be a huge speed bump early in my doctorate. I would get lost reading papers because I would have to look words up in the dictionary all the time. Some words were not to be found in a dictionary, even specialist discipline dictionaries, or they were used in a specific way and the writer assumed that the reader knew their interpretation of the word. I learnt to read a paper several times and always with my research problem and questions in mind. In the first pass I would skim it for meaning, in the

second pass I would read it in more detail and in the final pass I would work out the arguments and conclusions and determine if the conclusions do follow from the arguments and the data presented. I am grateful to Colin Lankshear and Michele Knobel (1999, p. 1) for their helpful advice about reading research papers which they referred to as “reading in the context of research”.

### **Finding a good navigator**

I found that I progressed the most in my doctorate when I had two supervisors. One was an ANT methodology specialist who helped me to understand the ANT theory and concepts, challenged my thinking and assisted me to work out the design my study. The other took a hands-on role with my writing. Academic writing is a skill and constructive feedback on one’s writing is invaluable in helping to improve the clarity and readability of one’s writing.

Study buddies in the form of recent graduates or fellow doctoral students can also help one avoid hurdles on the road to completion. A friend of mine offered to become my critical friend for the duration of the doctorate. She had recently completed her own thesis and said that she wanted to act as a sounding board for me on any issue that was worrying me with respect to my doctorate. I knew that at any time I could ring her and tell her what was troubling me and she would be honest in her response. For example, when I was unsure about taking on a middle management position at work because I felt that would prevent me from finishing the doctorate she sat down with me and helped me to list all the pros and cons of taking up that role and the possible effects it would have on my doctorate, career and family life. She also gave me constructive criticism on the penultimate drafts of my research proposal. As a ‘cold’ reader she was able to pick up things that I was not able to see because I was too close to the content.

A navigation tool that was very helpful to me was to create an outline of the doctoral thesis soon after my research proposal had been accepted. Creating the outline was an iterative process between my supervisor and myself. This outline gave me a structure to follow in my data collection, analysis and write-up.

A major mental obstacle was the thought of writing a 100,000-word thesis. When I was writing up my thesis I tried to break the write-up into easily managed sections. When writing I tried not to think of writing a 100,000-word thesis or even that I needed 10,000 to 20,000 words per chapter. Instead I would think about writing one subsection at a time, for example subsection 3.2.1. That way I was not overwhelmed by the enormity of completing a huge thesis instead I was concentrating on one idea or concept or theme in my analysis. After completing a chapter I would go back and reread all the subsections to make sure that the writing was consistent and flowed in a logical manner. It also meant that if I got stuck on a certain subsection I could leave it and start on another subsection.

### **Risks and dilemmas**

There were a number of risks when doing my doctorate. Most were beyond my control such as having to find a new supervisor when my previous supervisor left CQU. Some risks were within my control like deciding to change my supervisor when a new member of staff came to CQU who was an ANT specialist. A significant risk to completing my doctorate was myself! At times I became my own worst enemy. I would lose confidence or take on new tasks or unconsciously give my study the lowest priority in my life. Fortunately my supervisors (both doctoral and work) were very supportive and nurturing. A concept that helped me to refocus my priorities at key times in my doctorate (when I felt at risk of never completing it) was a question that one of my supervisors asked me in our first meeting. He asked me what I wanted to do when I grew up. By this he meant, where do you want to be in 5 years, or 10 years, time? He said that I needed to think about that first because my choices about the doctorate needed to be done in a way that supported my long-term goals.

I also learned that it was up to me to make the time to work on the doctorate. Nobody was going to create that space for me. One technique that I used was to block out times in my diary and instead of writing a generic comment such as ‘work on doctorate’ I would write out what task I intended to complete during that time. For example, ‘critique Law’s article’ or ‘write the ethics section in Chapter

3'. Having a focus for each segment of time meant that I was very focussed when I did spend time on the doctorate.

One of the biggest dilemmas I had in my research journey was how to balance the family, social, work and study aspects of my life. I became a parent and suffered the loss of two close family members during my doctoral journey. Rather than allow these events to overwhelm my life I used each of them to put my life in perspective and rethink what was important to me. While my family was and always will be my number one priority, I also acknowledged that completing my doctorate was very important to me as a personal achievement and to achieve credibility in the academic community. Rather than struggling to cope with my study during these life-changing events, I applied for leaves of absence from my study. This allowed me the time and the headspace to enjoy my daughter without guilt about not working on the doctorate and it gave me time to grieve without having to worry about deadlines.

### **Creating one's own 'ball of thread'**

Keeping a learning journal throughout one's journey allows one time to reflect on one's journey and also to look back to where one came from. It can also help one to stay focused. At times heavy workloads and events in my personal life prevented me from working on my doctorate. I tried to keep writing in the learning journal to ensure that I did not lose any ideas and it kept me in the habit of writing and thinking about my research.

There were times when huge teaching workloads meant that it was very difficult to find the time to work on the doctorate. I tried to write something at least once a week in my personal journal, even if it was just a short reflection on my teaching or writing down a significant incident. That meant that I continued the practice of thinking and writing analytically.

I have a tendency to go off on tangents when I find an interesting idea or concept. To try to avoid straying from the doctoral path too much, I created a folder called 'interesting ideas to follow up post-doctorate'. I would make some notes and include some relevant references, then put them in the folder for later. I knew that the idea would not be lost and I could go back to concentrating on my doctorate.

### **Conclusion**

All doctoral students will face risks, dilemmas and obstacles in their path to completing their doctoral theses. The use of simple tools such as: finding or creating a road map of research methodologies, creating your own street directory of methods and techniques, taking helicopter rides over the research landscape, setting aside the time for your research and finding good navigators in the form of supervisors, fellow students or critical friends will help you to overcome these risks, dilemmas and obstacles of conducting contemporary educational research in the early 21<sup>st</sup> Century.

Maintaining a personal, reflective, learning journal may act like a ball of thread to assist you to find your way back to your 'real life' post-doctorate and an 'interesting ideas' folder could be used as a signpost to your next destination – an exciting new research project!

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