Chapter 5
Writing the Thesis

The independent researcher, with sophisticated writing skills and need for a career, is one outcome of the doctorate. The text itself, the thesis, is another. This chapter swings focus onto that textual artefact, still concerned with the human experience of producing it, but aware that, for most candidates, the doctoral period of their life is dominated by the research and the writing of the thesis. That document itself takes centre stage.

The production of a doctoral thesis is usually the largest writing project its author has ever attempted. It is the first attempt at a task that, like running a marathon, will require discipline, management, social support, and will change the writer substantially. At the same time, the thesis is a sum of its parts; many workshops for doctoral candidates focus on some specific aspect of the thesis. This is because there are implicit expectations about what each part should accomplish to convince the reader that this is indeed a doctoral study. We avoid being baldly instrumental in this chapter, because experience persuades us that fulfilling generic expectations takes more than a paint-by-numbers approach. Nonetheless, there are helpful pointers. This chapter moves from general advice about the larger thesis project, through posts on specific parts or required moves of the thesis, to consideration of what examination requires of writing.

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General Advice: Impact, Early Choices, Ethics, and Narrative

'Impact' Is Important for Published Researchers, But What Does It Mean for Doctoral Writers?

Claire Aitchison

These days there is an increasing expectation that research has 'impact'. The impact agenda has particular resonance in a world where research funding is increasingly constrained and universities compete for influence and reputation in order to attract funding. Impact also connects to quality and accountability.

Impact is sometimes narrowly conceived of as countable measures of the uptake of research (i.e., publications, citations and grants), but it also includes less easily quantifiable things like influence on practice, resultant applications, the generation of new ideas and outcomes, and longer-term subtle change. This perspective relates to ideas about the public good and the public intellectual—in other words, it is about being connected to, and giving back to, society.

But How Does this Impact Agenda Affect Doctoral Research and Writing?
Firstly, considerations of 'impact' can constrain or influence ***the choice of doctoral research*** topic. For example, an aspiring doctoral candidate may have a personal passion or interest in floral art—but is this alone worthy of four years of public funding? If, however, their research concerns the re-imagination of the cultural aesthetic, an exploration of commercial value, or the preservation of endangered flora for floristry, the potential impact becomes clear because the benefit of the research is clear.

A key task of a doctoral thesis has always been to identify the purpose and the significance of the study. When we consider impact, this becomes even more important: potential impact not only justifies the choice of research project; it also validates the chances of ***lasting influence or 'contribution'***.

Research impact counted through scholarly publications and citations is an 'end-of' activity, occurring after publications are in the public domain. If doctoral researchers are able to publish during candidature they can complement claims of potential impact with evidence. A shift to demonstrating impact during candidature may contribute further to the ***rise in doctoral student publishing*** and may result in research dissemination being reconsidered not simply as an end-of activity, but, rather, an organic part of the doctoral writing process across candidature.

Concerns for impact may necessitate ***different practices during candidature*** regarding dissemination and profile-building for the doctoral student. Because scholarly publication is notoriously slow, doctoral students (and academics more generally) are using social media platforms to build learning networks, and to discuss and disseminate their research.

It seems to me that doctoral writers who aim for impact need to undertake careful positioning work within traditional 'big book' theses, as well as develop strong

digital communication skills. The expectation for social accountability, or relevance, requires a rhetorical balancing act on the part of the writer, who needs to satisfy sometimes quite different conceptions of 'relevance' and 'doctoralness'.

For the thesis writer, purpose, significance, contribution and relevance are all part of ***the narrative of impact***. It is not always easy to produce this kind of writing. Stylistically it ***can feel awkward and self-promotional*** if done poorly. To maintain a credible and authoritative stance, claims for significance arising from findings need to be tempered in strength against the evidence (sample size, statistical relevance and so on) and in light of a (social) value. Claims for impact will be largely propositional and may be complemented by evidence where it already exists.

Traditionally, doctoral writers establish the rationale and justification for their research primarily in relation to a gap in the literature. In grant writing, we see that the justification for the research turns not so much on a detailed account of what we don't know (as evidenced by the gap in the scholarly literature), but rather on the impact of this absence of knowledge in relation to something of importance. Thus a grant writer is appealing for financial support not simply because the discipline is interested in finding out something, but because that knowledge has implications/applications that will benefit society in some way. A grant writer knows that if they cannily connect their research to a bigger agenda—especially if that coincides with a national priority or one identified by the granting body—their chances of success increase significantly.

A doctoral writer does not always have such ***clarity about the audience and purpose*** to help frame this kind of rhetorical performance. Oftentimes they are 'writing blind', knowing with confidence that the gap in the literature identifies a worthwhile study, and *imagining* the relevance to a setting such as a school, farm or industry. Connecting the research to 'what matters' requires the writer to be connected to an industry or social community outside the academy. In other words, the doctoral writer needs to convince their examiner that this project is worthwhile in a way that goes beyond academic curiosity.

There are ***key places in a traditional thesis*** where this work needs to occur. The abstract should highlight the importance of the work—and if there is already strong evidence of impact, this can be referred to directly. The Introduction traditionally gives the rationale for the research (based on a research problem demonstrated to be of some importance). Then, in arguing the significance, the writer needs to provide a measured outline of possible areas of influence or application. If there is already evidence of how others have found value in the work (such as citations, media acknowledgements, Twitter feeds), then these can be cited. It can be useful to find opportunities to self-cite in the Introduction to establish the profile of the research and researcher early on. (But not all disciplines approve of this practice—so don't overdo it!) The Conclusion should also re-affirm impact and summarise key examples because this is where contribution is generally given most credence.

Impact is founded on the idea that the research project will have some kind of life, value and influence beyond and outside of itself. This is a worthwhile aspiration—so, early on, plan for it, and practise writing about it.

Research Writing Outside the Box

Susan Carter

It is exhilarating to come across research that pushes the boundaries. Human ingenuity is alive, fresh and daring in such work. I say 'daring' because, in every boundary-stretching instance I know of, there are always some risks and costs. 'Pioneer' is something of a cliché, but researchers who step into the unknown are pioneers in the most red-blooded, riskiest sense.

I want to use three examples of pioneering theses.

Example 1: One prompt for this post is the tale of the comic book thesis by Nick Sousanis, *Unflattening: A visual-verbal inquiry into learning in many dimensions*. It's worth reading. Firstly, anyone working with theory is likely to be wowed by how cleverly theory is shown visually in comic strip format; this is a staggeringly stylish and advanced representation. Secondly, the article describing it spells out some of the tensions involved in doctoral innovation that I am thinking about here in relation to doctoral writing.

Example 2: At my own institution, one of my favourite theses is Poulsen's (2009) *Another Way with Words: Language as Twentieth-century Art Practice*. Structured like a medieval commonplace or day book, it has 26 chapters, one for each letter of the alphabet. Each chapter-heading word is theoretical: as with a commonplace book, what looks simple is designed as a pleasurably deep-level exegesis. It is an exquisite demonstration of expertise.

Example 3: In New Zealand, I'm aware of two theses on the use of Māori language in education. One is written in English. One is, unusually and excitingly, written in Māori, in *te reo*. Because New Zealand education is governed by the Treaty of Waitangi, we have an option to use Māori language in many situations, including in education; using it is a decision bristling with political positionality.

If you choose to walk the political talk and talk in *te reo*, the reality is that your audience shrinks immediately. Other indigenous scholars won't have access to your ideas—not all Māori can understand *te reo*. On the up-side, your leadership within your own community may be firmly established, and you may be able to drive real changes to how New Zealanders perceive education.

My instinctive reaction to pioneers is to applaud. Innovators are heroic figures. They make the world a more promisingly complex, puzzlingly rich place as they engineer rules, and change configurations. I join others who suggest that examiners need to be open to frameworks other than those they already know and use, and welcoming of people who expand the boxes we work within.

I worry, though, whether candidates will be strong enough to survive the risks of pioneering. Sometimes it is hard to find examiners who will be as flexible as the work itself. After graduation, will institutions welcome the new graduate or appoint someone a little more central, a little less risky? Does the student have the psychological stamina to forge a new path forward? And, perhaps most importantly,

are their writing skills sophisticated enough for the execution of stunningly innovative ideas? If not, I recommend a less ambitious approach in the interest of survival.

Defending Research Choices in Doctoral Writing: Getting the Defence Habit at the Start of the Research

Susan Carter

Thesis writing is aimed at a primary reader: the examiner, a creature from the back of the psychological cave. Examiners are much feared because they are, by definition, testy readers, menacingly powerful. The research thesis is thus the most defensive academic writing we produce, more defensive than undergraduate work or articles.

Johnston (1997) sensibly points out that 'Examiners require all of the normal forms of assistance which should be provided to any reader' (p. 345). Additionally, examiners often work in the evenings in short bursts, and may need just a little more guidance, despite being experts by definition. Doctoral writing should steer them towards signing off the thesis as completed.

Reading research on examiners' needs is good before submission, even better if it's quite early on in the doctorate. Useful questions to imagine examiners asking include:

- Why did you choose that particular problem? Why did you not study this other problem instead?
- What exactly were you trying to find out? I'm unclear about the meaning of your problem statement.
- You have reviewed the important literature, but I fail to see what use you make of your review. Can you clarify for me what you learned from the review of literature?
- When you reviewed the literature, why did you decide to review that particular area of study?
- Why did you choose that particular method? Why did you not instead use this other method?
- Can you clarify for me how the particular method you chose relates directly to the problem you have chosen to study?

(Glatthorn, 1998, pp. 186–188)

Addressing these questions somewhere in the first year of the doctorate when decisions are being made boosts word count—good for confidence level and keeps supervisor happy—and establishes the mindset of defending choices in writing. Careful defence also shows that the writer knows about the thesis genre—it gives the look of someone who is already an insider.

And examiners will want to see that:

- the rationale for the study is clearly explicated;
- the appropriateness of the researcher conducting this study is made clear;

- clear and succinct hypotheses or questions are derived from/revealed by the literature review;
- the rationale of the general approach is closely argued, giving a reasoned case for rejecting other possible approaches;
- a justification of the research design is presented, taking account of potential advantages and limitations;
- the research techniques are argued as being theoretically and practically relevant to the research problem; reasons are given for rejection of possible alternatives, rationale provided for amendments to standard tests and procedures or for detailed design of innovative techniques.

(Tinkler & Jackson, 2004, pp. 114–116)

Another good source of examiner questions or focus is found in Trafford and Leshem (2002), who analyse what examiners want to tick off as satisfactory, and come up with 10 'clusters' of questions round different generic doctoral aspects: e.g., research design, conceptualisation, methodology, methods, etc. Thesis writers may need to disengage attention to research in the early stages to patiently defend decisions as they are making them.

Keeping the Public Out: No-Go Areas in Your Thesis

Claire Aitchison

Earlier this month when I was running some workshops for doctoral students in the Northern Territory of Australia, a conversation ensued about no-go areas in the thesis.

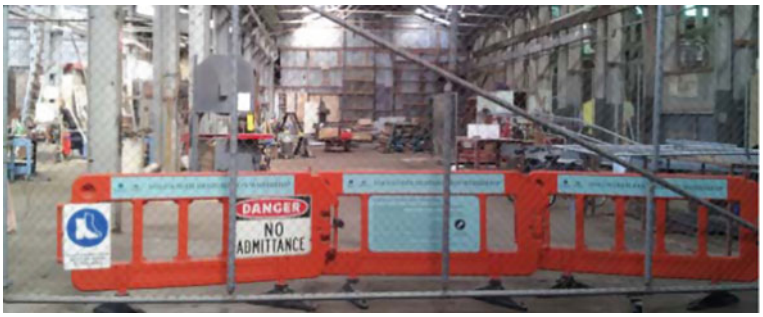

Photo: Claire Aitchison

In thesis writing, as in life, we are wise to keep certain things to ourselves. Some things that happen in doctoral research are best not shared. For example, don't mention how you forgot to turn on the tape recorder at the focus group interview…

Let me quickly make it clear that I am not advocating unethical practices like hiding bad results or manipulating data or findings, or withholding relevant information from participants. It is absolutely imperative to conform to ethical standards of research and be as open and transparent as possible.

But in writing the thesis, one constantly needs to make decisions about what to include and exclude. Various institutional, disciplinary and ethical practices—and personal preferences—impact our decision-making about what goes into, or stays out of, the thesis.

For example, how much do we need to tell about the twists and turns of the research journey? It's not always clear. I worked with a student who sought to measure the impact of a certain leaf-chewing insect on a eucalypt forest. For many and convoluted reasons to do with access to a specific machine in the laboratory, she ended up changing her research, instead investigating the impact of the insect droppings on soil structures. She could have told this story from a variety of vantage points—not the least of which would have been her anger and frustration! What appeared in her thesis, however, was a very authoritative statement about the need for the study she did. Another scholar working with an indigenous community also had to make significant and unexpected changes to her research. She recognised that she was not at liberty to relate any aspect of what had brought about this substantial change, even though it had required her to abort three years of data collection and reconfigure her entire project. Her choice to keep the public out of this part of the story was the right ethical decision.

It's unlikely any doctoral thesis will include a review o*f all* the relevant literature. Generally, it's only after many iterations that we get clarity about what can stay and what must go. If it's not fit for purpose, then it shouldn't be in the thesis.

Reporting on the pilot study can also present a dilemma. In my own doctoral research I did a small test-run to check the veracity of my interview questions and my recruitment processes. It was a useful activity for me—but it wasn't a particularly important part of the research and I never reported on it, nor did I use the data that I collected in the process. On the other hand, I've known of situations where the pilot study, although conceived of simply as a mechanism to test a research method, itself became an important source of data. In such cases, should the researcher describe how it started out as one thing and changed to another? Could they abandon the term 'pilot study' and include that original investigation as one of the data sets?

Sometimes there is uncertainty about inclusions in appendices. Some scientific studies require lengthy appendices (detailing protocols and calibration specifications, for example). In the social sciences and humanities there is often less need—but again, it depends. I know of a couple of studies using photovoice as a method, but only one thesis had an appendix with participants' photos. For most social research, it would be rare to provide participant interview transcripts in the appendices—on the other hand, it's likely in applied linguistics.

When deciding whether or not something needs to go into the thesis, I am reminded of something my kids say: 'I'll tell you if you need to know'. This could be equally good advice for thesis writers.

Thesis Writing: Process and Package

Susan Carter

I've been thinking about the divide between doing research and packaging it up into a thesis. On one side, there's all the thinking, sense of inadequacy and panic that goes into the research work, and on the other there's the calm emotional-suppression of the doctoral thesis's formal academic writing. The thesis contains all the baggage of the literature review, methodology, theory, with aspects of research that entailed roller-coaster emotional highs and lows, all packaged up together in pristine neatness. At the stage when the work is done and the drafts are in, you need to cross that divide.

Kevin Sowerby, an Engineering academic at my university, told the story of a friend who had travelled the same route as Michael Palin, of Monty Python fame, but also now known for his travelogue TV docos. Sowerby's friend noticed when he later saw the TV film that people and places were often presented a little out of sequence. He realized that production loyalty was not to exact detail of the journey's order, but to what would enhance the viewer's pleasure. Aesthetic values were overriding those of detailed factuality. And he decided that this was good thing. The end product *was* more interesting. It was not false—you could say 'As we approached this village we noticed…' and it was still true even if the shot that followed was filmed during the eighth approach to the village as they came and went. The effect was that what seemed significant and unique was emphasised. Kevin was pointing out that this is true of the thesis: emphasising what is significant is more important than faithfully following the trajectory of your research progress.

A second comparison is the art of packaging. Imagine that you have changed jobs. You are no longer production manager. You have moved into packaging and marketing. You can ditch all those anxieties about meeting deadlines, pumping output up, and making sure that the machinery runs properly. Now your task is only to envision the product consumer and what they will buy. Doctoral writing can been seen as packaging and promoting doctoral wares so that they sell.

The Importance of Narrative

Cally Guerin

It seems that everywhere I look, people are becoming more and more focused on narrative in academic and research writing. Whether it is an application for a research

grant, a research report or a teaching award application, the constant refrain is: 'Try to tell more of a *story* about this'. It is particularly common to be encouraged to write literature reviews—and even entire theses—as if they are a 'story'.

What is this about? I suspect that the writer needs to interpret and join up the bare facts of the case, not just present that information and wait for the reader to infer what it all means. Perhaps narrativising is also a way of engaging the reader with some kind of emotional tug—the story can attract readers' attention and make them care about the topic.

So, if we want to write research with more of a story, it is useful to consider the various elements of conventional storytelling in order to see how they could be harnessed.

To start with, stories require a ***setting***, so it is necessary to describe the context for the research. To some extent, the setting can be a way of putting parameters around the project, pointing to the specifics of the context that are relevant for the rest of the research.

Characters might refer to the main players as the researchers, or might refer to the study population. The characters involved in a study do not always mean people, of course—it could be a gene or a building material under investigation, or a set of policy documents that are being examined.

Plot is where structure starts to emerge. The stages of plot can help draw the reader into wanting to know 'and then what happened?', inviting them to see how this story evolves. Readers need to start with an *orientation* to the original topic to be explored and a sense of the current state of affairs. Next, the *complication* can be described—what is it that we need to find out more about? What is the problem/gap to be explored? And eventually (importantly for reader satisfaction), a plot requires resolution—what were the findings or outcome of the research, and how does this change our knowledge of the world?

Storytelling also takes into account ***content and form***. For research writers, this refers to collecting and collating the relevant information and ensuring details (and resulting conclusions) are accurate. That content must be expressed in a form that meets reader expectations, which will always depend on disciplinary expectations.

Once we know ***who*** did it, ***what*** happens, ***when*** and ***where*** it occurred, narrative also demands that we can see the relationship between different elements; readers need to understand why this bit comes before that section, and how those parts inform each other. The ***why*** is important here just as it is in other stories—why did this happen and why is it important or interesting?

The ***storyboarding*** approach can be helpful for choosing what order things should go in. One way of storyboarding is to use PowerPoint to plan the writing. One slide for each idea or paragraph provides a graphic split between the chunks of content, and they are easily moved around using the 'slide sorter' view. The thesis story may then be seen with different plot scenarios, helping the writer to choose the right story line according to where the significant parts of the content are, and what order will make them most accessible to the reader.

The Developing Thesis Proposal: Questions to Launch Doctoral Writing

Susan Carter

A potential doctoral candidate choosing their topic might ask themselves: '"What are the subjects that interest me—that I want to make sense of?" "Who do I want to talk to about these subjects?" And "What can I bring to the conversation?"' (Kempe, 2005, p. 2). These are three pertinent questions that Anne Sigismund Huff (cited in Kempe, 2005) sees as initiating research direction. From there, though, it is rarely that simple.

Crotty (1998, p. 1) notes that 'methods and methodologies…may appear more as a maze than as pathways to orderly research'. Indeed. As students read more, more possibilities become evident. The complexities suggest many potential pathways. Choices at the outset are hard because so much is unknown.

Yet the doctorate is constrained by time and budget. The first year of enrolment at our institution is provisional, and by the end of it, the student needs to have produced a full thesis proposal of about 10,000 words. Considerable emotional tension can occur when uncertainty delays writing. The choices are significant; it seems unwise to make them hastily, and yet, as weeks slide into months, students (and supervisors) can feel increasingly anxious if they have produced little writing in the face of this 10,000-word requirement. Strategies that help students get writing done early, and often, can go a long way to reducing the debilitation of rising anxiety.

Here is a set of questions that one student found helpful to prompt early writing. The questions are a subset that were intended to help her to find the answers to Crotty's essential questions, begin writing her proposal, and escape from anxiety. She thought about the questions ahead of our meeting; during the meeting I typed notes while she talked through her responses to each question.

- What was your original motivating idea for your doctorate? Was there a problem you wanted to investigate in order to make it better?
- What has been added to this idea as you have been reading, reflecting and talking?
- Has anything been cut back? If so, what, and for what reason?
- Who will be helped by your research findings and in what way? What might be the original contribution and who could benefit from it?
- What sort of research do you most like doing, or expect that you would like to do?
- Where is it easiest for you to gather data? (Some international students plan a trip home, whereas others can't afford it.)
- What work would you most like to do when you graduate? Where would you like to work, for whom, and doing what?
- We've talked about several methods. List the positives and negative of each, what benefits it would give you and what problems it might cause.

The exercise reminded me of how crucial *questions* are at the start of the doctorate. If supervisors and students work through many questions, discussion around what

questions need to be asked will begin the talk that enables the full proposal to be defensively written.

Structure: Issues of Design

Scoping: Bean-Counting as a Step to Thesis Writing?

Susan Carter

An academic friend declared that it was absurd for students to ask how many references were needed in a thesis, as though you tallied these up quantitatively. 'How long is a piece of string?' was her standard response. I don't agree; measuring out that string quantitatively gives another way to think quite deeply about thesis writing.

This insight was triggered when I'd organised a panel of academics for a workshop on thesis writing and a doctoral student asked them how many references were needed in the Works Cited list. He had over 1000—was this too many? And a professor from Engineering almost instantly replied, 'Yes, it is too many. You need about 200.' I was startled—tallying numbers seemed at odds with the requirement for critical evaluation and analysis. Yet I could see that 1000 references *would* signal a lack of the critical evaluation needed to choose wisely.

Getting a sense of 'how many' helps judge how the research fits into what is expected in the thesis. If there is a general convention that a thesis in this discipline cites around 200 items, knowing this begins to scope what might be excluded. You *must* decide on your inclusion criteria and adhere to them.

So I suggest thesis writers try taking a bean-counter approach to the task of scoping the thesis, beyond the number of references. How many words in total are desirable? How many chapters are needed? About how long will the Introduction and Conclusion be? How detailed will the description of methodology need to be, and then, if methods are to be contextualised within a methodology, how long is that likely to take? How important is theory, and how many words will its discussion consume?

In New Zealand and Australia, usually the thesis may not exceed 100,000 words, with an unspoken assumption that around 80,000 words suffices for an average thesis written primarily in prose (rather than coding or formula). At the start of a doctorate, thinking about the practical realities of research can develop in tandem with thinking about the thesis, the textual artefact. Thinking through the length factor might help to ensure delivery of the right length of string.

Limitation can do more than render things doable in creating small chunks: it can also give traction to the whole cognitive process of deciding what will and won't be included. It compels thought towards the importance of each section in relation to the other sections, moving towards a structural overview and thus understanding of the work as a whole.

What's the Formula for Writing a Thesis?

Cally Guerin

Sometimes it seems that doctoral students attend workshops on thesis writing seeking a nice, neat formula to follow. The primary question they want answered is: 'What's correct?' Given all their other pressures on them—to finish on time, to be original, to get research published, etc., etc.—it's easy to understand the desire for a simple, straightforward set of rules to follow that will please examiners and journal editors alike. Part of the writing teacher's job seems to be letting them down softly and helping them realise that it can never be that simple. The route to thesis submission always demands complicated decision-making along the way; even more challenging, the environment in which those submissions occur is changing rapidly in unpredictable ways.

There is some comfort for those seeking these kinds of formulaic answers, however, in the traditional IMRAD structure of scientific articles: Introduction, Materials and Methods, Results, and Discussion. Unfortunately, this neat acronym neglects to mention the Abstract and Reference sections. And then, the apparently neat separation between different sections turns out to be rather messier for many researchers—is it okay to include some discussion in the Materials and Methods to explain why a non-standard procedure was adopted? Is there always a clear cut-off between Results and Analysis/Discussion if I'm reporting on qualitative research that has already been analysed in order to create some broad organising themes? For useful strategies to work through such complex issues, try Carter, Kelly, and Brailsford's (2012) *Structuring Your Research Thesis.*

Also very popular amongst those looking for instruction is the 'moves' or CaRS (Create a Research Space) approach developed by Swales and Feak (1994, 2004). This model illuminates the reasoning behind Introductions in research and includes three main moves or positionings: establish a research territory (and make a case for why it matters); establish a niche (and point out a gap in the field); and occupy that niche (by explaining what this new research will add to the field). These moves or opening gambits work very well as a means to engage readers and demonstrate the value of the research. This approach has been picked up and developed further since (see, for example, Cargill & O'Connor, 2009; Paltridge & Starfield, 2007).

The structures mentioned above provide very useful guidance for novice writers, but a thesis requires much more nuanced negotiation of the conventions of the discipline. In relation to this, Anne Freadman, doyenne of genre theory, pointed out at the Writing Research Across Borders (WRAB) conference that writers need to conform to the 'generic form' only *sufficiently* for readers to recognise where their work fits in with the conventions and expectations of genre—they do not need to slavishly imitate or repeat that genre. The real achievement is for doctoral writers to find a balance between what they want to say and the conventions of their discipline. This is always a matter of judgment and can't be dictated by adherence to strict rules.

Research Storylines: Moving Beyond Mills and Boon

Claire Aitchison

At a writing retreat this week I was reminded again of the importance of finding the right storyline. Of course there is the **generic Research Storyline** that goes like this:

> There is a research problem –> the extant literature shows –> the research gap is –> the research aimed to investigate –> the methodology/method used –> the findings/results showed.

This storyline foregrounds the research itself. The style and terminology create a sense of objectivity and the storyteller is invisible. It is the logic of empirical experimental research design as demonstrated in the IMRAD structure (see post above) of most scientific papers. **The long arm of the scientific method** infuses so much of our academic writing that this structural storyline is applicable across multiple disciplines and kinds of studies. It's **the Mills and Boon of academic research writing**.

A good storyteller will manipulate the template to suit their needs. For example, one student sought help saying that, even though she'd covered all the necessary components, her supervisor said the thesis was disjointed and she'd been told to make links between the sections. As we talked about practitioner-research as a methodology, it became clear the story could (indeed, *needed* to) be personal, and thus we worked through where and how she, as practitioner-researcher, would become the link across the thesis. As both narrator and protagonist she would use the first person to tell her researcher journey—and her story unfolded thus:

> There was a problem/issue in my workplace that worried me (the Research Problem) –> some things were already known about it (the Literature) –> but there are some things we don't know (the Gap) –> I set out to address the unknown (Research Aim) –> this is what I did (Methodology/ Methods) –> this is what I found (Results/ Findings) –> and this is what it means for my work (Implications).

It's the same storyline, but told differently. Very often empirical research involves this kind of '**grand narrative**' or overarching storyline within which smaller substories can sit. Examples of **offspring stories** may include the story of doing the fieldwork, the story of the literature, or one part of the literature. There are stories within stories and authors must decide how to tell them.

But identifying the right story isn't always so straightforward.

Zeiger (2000) says the natural storyline for an experimental hypothesis or research testing paper is chronological. In this kind of story, the account of the experiment flows like a recipe that first itemises the ingredients and then describes, step by step, the processes for mixing and baking.

When I'm working with scholars who are 'stuck'—perhaps they have lost track of where they are going, they've wandered off on a tangent or become bogged down—helping them to identify a single, robust storyline can be a breakthrough. Having a clear grand narrative makes it easier to locate subsequent sections or papers in relation

to the main story, something that's a particular challenge for those undertaking a thesis by series of publications.

Many texts on doctoral writing refer to the importance of telling a story—but, of course, this requires having the right storyline in the first place!

Insecure in a Good Way: Thesis Structure Changes Over Time

Susan Carter

Sometimes feeling insecure about thesis writing is a simply an uncomfortable symptom of increasing understanding of the topic. The example here is the experience of designing a thesis structure, but there may be other times when insecurity, despair even, has to be read as a sign that you are right on track. You are just getting wiser.

It's disconcertingly counterintuitive.

The example: At many institutions, there is an assumption that, by the end of the first year, thesis structure is more or less nailed in place. However, with colleagues Frances Kelly and Marion Blumenstein, I researched doctoral students ($n = 92$) to learn more. What was unexpected was that when we correlated time-through-the-doctorate and Likert-scale levels of uncertainty about structure, we found that the further through the doctorate individuals were, the *less sure* they felt about their thesis structure.

In almost every discipline, some doctoral students find the rigidity of that structure does not serve the complexity of their topic well. And this realisation, which may come a year or two in, is bothersome. Candidates become torn by anxiety: if they are too creative, examiners may not recognise their work as a legitimate thesis. But they may feel increasingly unwilling to stay on the well-trod path.

My two-hour workshop on structuring a thesis sets off from the IMRAD model—if that never-fail recipe will work, it should be taken up gratefully and followed. Students who want to finish as quickly as possible find IMRAD as a recognisable, short, safe route. But IMRAD is also a check-list for thesis writers who don't use it; they will still need to do the work of these sections somewhere and somehow within their theses. And make sure the expected generic moves are visible. From there we work through a raft of possible ways to think about structure.

Our project suggests that initial structure plans aren't final, nor should they be; they are contingent, and enable forward movement. As students gradually come to understand their topic, they may need to reorganise their plan—and they may have to live with the reality that doctoral writing is always a compromised negotiation. At the time, this feels like disillusionment, but it is also the learning of research skills. And possibly of wisdom that translates elsewhere.

Leave It in or Delete It? Dilemmas in Writing the Research Story

Cally Guerin

Increasingly, I remind students that a thesis doesn't have to report on every single thought the researcher has had for the past three or four (or more) years of candidature. Sure, it is valuable to include descriptions of null responses or negative results from experiments—this is certainly interesting and helpful for other researchers in the area, sometimes closing off possible paths that are now known to be unfruitful. It can also be very useful to report on problems that arose during the project which changed the direction of the research. Such insights can demonstrate critical thinking on the part of the candidate who encountered problems and also found innovative solutions.

What gets left out is sometimes as important as what is in the thesis, however. Not everything that has been read needs to be included in the literature review; indeed, critical thinking is demonstrated in part by being discerning, rather than offering up a grab-bag of all that vaguely touches on an area. Staying focused on one central line of argument, maintaining a strong sense of direction and not going off onto irrelevant tangents, makes for good research writing, as does the capacity to delete sentences that, however beautifully written, move off in a different direction. Likewise, a scholar must choose what is usefully included in the final telling of the story of the thesis.

I use the word *story* deliberately to imply that this is one version of events that has been carefully constructed and crafted to present a coherent account of the research process. I like Rudestam and Newton's (2001) description of a well-written thesis containing many of the elements of detective fiction: a mystery in terms of a research question that requires answering; clues that take the form of data collection; the elimination of incorrect answers or red herrings encountered along the way. The thesis doesn't necessarily have to follow the chronology of events as experienced by the researcher—readers need a coherent story about those events that adheres to its own internal logic in order to understand the value and integrity of the research itself.

Perhaps this is as good a place as any to make a plug for the thesis by publication. This form is often rather leaner than traditional format theses. It offers one way to help students stay focused on what is interesting and useful to the reader. Writing with the audience of journal reviewers in mind can be a valuable aid towards being a little more objective about one's own writing; having a strict word or page limit can also focus the mind on what really needs to be included. Using the format of a journal article encourages researchers to home in on what's new and important, and to recognise what is assumed knowledge at this level.

The Bones of the Thesis: Structure and Articulation

Susan Carter

I was talking to a chap who'd just graduated from a Master's with strong grades. He said, 'Sometimes I got my best marks when I was really busy and didn't have enough time. When you're too busy, you'd just try to figure out the bare bones of what they wanted. Actually, that seems to be what matters.' With a big project like a doctoral thesis, noticing what matters becomes harder because there is so much detail to attend to with painstaking care.

Yet examiners who need to tick off that each of the generic requirements has been met are really looking for 'what matters.' A thesis with good bones usually stands out as strong once finished. Figuring out the bone structure gives a writer advantages at many stages of the thesis. Usually a full thesis proposal produced in the first year will have a skeleton outline. The more specific such an outline is, the easier to begin the writing project.

During the writing of the whole thesis, shifting from detail to the bare bones of thesis structure gives psychological relief as a way of shuffling forward with a large writing project. Moving back and forth between structure and detail helps with the sheer tedium involved in a large project. Then, before submission, it's a good idea to take an x-ray view of the thesis. At the end, the *articulation* of the skeleton becomes crucial because it does much of the work that allows the examiner to identify the criteria for a Ph.D. That word, articulation, is apt: it applies to both talk and to movement. 'Articulate' is the word I use for absolute precision with a theoretical or novel idea that is still slightly nebulous.

Then the articulation of the skeleton gives movement to the mass of flesh: the talk of a thesis, the flesh of content, needs to *make moves* too. The metaphor of a skeleton with articulation could be taken a bit further into the joinery hooking those bones together. Ensuring that every section of the thesis is framed within the main argument, the context of the problem, what is known, what unknown, the theory, the methodology and why the research matters somehow assures examiners that this is a coherent entity that makes a sufficiently substantial contribution. Successful articulation of those good bones (what really matters) ensures that the research contribution is valuable and interesting.

Turning Facts into a Doctoral Story: The Essence of a Good Doctorate

Susan Carter

Recently, three experiences collided for me: having a co-authored article rejected; examining a thesis; and giving feedback on a literature review. They brought home

how essential it is in the world of doctoral writing to turn facts, even sophisticated original facts, into a story. As I circled round each chore on my list, I saw how problematic it is when the storyline is lost within thickets of academic writing.

I learnt this as a doctoral candidate when my colleague Margaret Reeves complained about academics being suckers for plain old-fashioned stories—she lamented that academics do not perform the sophistication you might hope for in a post-modern era. Instead, they favour a homely, familiar storyline. Most will not recognise a valuable contribution without it.

Margaret's lament was in conjunction with Ian Watt being credited as the historian who first tracked the rise of the novel: Margaret knew that several scholars had rolled the same facts together, but it was Ian who turned it into a story, with the novel as the main character. Margaret has written on this, asking: 'Why is it, then, that *Rise of the Novel* has had a much greater impact on our understanding of the conditions enabling the novel's growth than any of these earlier literary histories?' (Reeves, 2000, p. 32). Her answer is that Watt's version drew out *a story* that readers could follow.

So how can doctoral writers be encouraged to make use of what Reeves calls 'an Enlightenment narrative of uninterrupted progress' and what I usually describe as something like the simple structure of most stories for small children?

This post describes an exercise with a doctoral writer who was having trouble turning lists of facts into a story. I gave her some scattered, random words around the theme of 'flowers'. Then I asked for all the words to be ordered as a story. Working together, talking rather than writing, we realised that different stories could be built from these words. I suspect this might be good as a writing workshop exercise. Each story-maker could be given two sheets with the same words and asked to make two different stories. The stories we made could be seen as different arguments, demonstrating why you must have a connecting story: it is the story's progress that builds an argument in doctoral writing.

I'm speculating that maintaining a *thesis* in the written thesis in the simplest of terms means turning it into a story, with the same kind of structure as the ones we read to children: characters (in a thesis these are usually things not animals or people), what happens to them, and then a conclusion.

I've pondered upon the different plots of doctoral stories (Carter et al., 2012, pp. 58–63) while thinking about thesis structuring work. Possible structures are: bildungsromans, that is, stories of maturation; quests; journey narratives; loss and recuperation stories; tragedies or romances in which 'characters' are put together with happy results. Another workshop might be what kind of story is your research thesis…

Here are the words I presented printed like this on a page, in several copies, and then we circled and numbered them, and talked the stories through to each other.

lily wedding flower plant petal rose
colour daisy paintings funeral scent
chrysanthemum symbolism miniature rose wild flowers
bridal bouquet edible flowers climbing rose beauty
deep red patterns of petals flower arrangements art
cauliflower religious interpretations soft white rhizomes
vines bees flycatchers tiny flowers

A similar exercise could be devised for individual doctoral writers or as a group workshop.

Argument and Contribution

Structure as a Booster for the Argument

Susan Carter

Although structure can be revised through ordinary workerly diligence, its effect works at a deeper level, showing authority and conveying purpose. How's that achieved?

Ann tells of her experience a thesis writer: 'I visualized the hard-bound thesis, complete with my name on the spine, as being an "argument" from beginning to end. I designed every chapter to have a punch-line, which would contribute one major argument in support of a holistic contention' (Carter et al., 2012, p. 56). Her envisioning ahead of doing (a helpful strategy in itself) shows she was aware of the need for structure to hold the argument in place right through the thesis.

Each chapter can be framed with an Introduction and Conclusion that deliberately takes the holistic argument forward. Often this will be installed only towards the end of the thesis writing process, when the overarching argument becomes clear. But a sentence written early on that says what this chapter needs to contribute to the thesis can also act as an anchor to hold the author to the chapter's purpose. Knowing the precise purpose of the chapter can guide the cutting back to delete what is not relevant.

A firm line of argument can be held in place by the use of subtitles and what Elizabeth Rankin calls 'echo links' (Rankin, 2001, p. 30), clusters of words embedded within the thesis rather than in subtitles that assure the reader the themes within the argument are woven consistently throughout. White (2011, p. 132) gives examples of what he calls 'preview, overview and recall':

> The following analysis is presented in two stages. In the first the current perspectives on…are evaluated. The second is a critical evaluation of….In this chapter the reason for….has been discussed. In the next section, this discussion will be elaborated by…

His example of recall is 'back in the introduction'. In a recent writing class, a nice example of recall was found when we looked at Introductions and Conclusions in articles chosen for their strength: the Conclusion began, 'To return to our research question….' Linkages like this can be installed during the final revision process, when one sweep through the entire thing could seek to install linkages.

This post emphasises that structure should relate to the argument and purpose of the thesis. The conventional headings of Introduction, Literature Review, Methods, Findings, Discussion and Conclusion do this to some extent: they signal covertly that this written work describes an authentic bit of research contextualised within its discourse and following acceptable methods in its epistemology. But the reader wants to know what the original contribution to knowledge is, that is, what new argument is offered. I recommend that thesis writers deliberately make use of structure to clearly show the argument their research allows them to make.

A Good Argument: The Thesis of the Thesis

Susan Carter

The *thinking done through writing* is perhaps the most powerful route to developing a good argument. Yet often it is only once the whole project is completed that the author is able to defend what the findings of the project mean. This means just before submission they need to calibrate what is usually called an 'argument'.

A good argument, then,

- expresses the single most significant contribution;
- goes beyond facts to what they mean in practice and to theory;
- avoids being dogmatic/didactic;
- is critical and not just a description of the research project;
- aims to persuade based on logic and evidence (not just a statement of fact); and
- is more significant than claiming that something needs more study (or funding).

It can be difficult to decide which aspect of a novel contribution is really the strongest. Sometimes it is possible to interpret data from different perspectives. It can be hard to choose the most significant story that comprises a thesis's thesis.

Some of us are led to a research topic because we have an existing, didactic position on the topic. We all bring our life's experience to research, and then we acquire academic approaches, theory, and discipline epistemologies. Despite initial motivation towards the topic, though, researchers must keep an open mind to what findings show. It can be that the thesis argument changes from the original argument intended by a candidate. It may even happen that the final argument has a similar structure to a detective thriller: 'All the evidence for what produces B points to fact C, and yet analysis of M and N shows that C is a red herring: it is really Z that influences B.'

It can take time to fully process findings, too. Although my kindly examiners allowed me to fly through the Ph.D. examination, I achieved my best iteration of the argument inherent in my doctorate in a book chapter that came out 10 years after graduation (Carter, 2011). Doctoral candidates can take comfort in the fact that the thesis argument of their thesis may not necessarily be the final one emerging from the doctoral project. But, meantime, before submission, they may welcome prompts to help them articulate the argument more clearly and defensibly.

A doctoral writer might self-audit by writing the argument statement in a format that begins: 'This thesis argues/proposes that…' and then goes through the statement checking the following:

- is every word accurate?
- can I stand by this and live by it as a researcher?
- what sort of challenge to my argument might come from my research field? Can I refute it?
- is the most important noun in the subject position of the main clause?
- is the main verb accurate?
- is the tone right, not more dogmatic or confrontational nor more understated than what I really want to say?

It's also sensible to consider the precision of that verb defining whether the thesis 'argues' or 'proposes'. The final statement from the research could 'suggest', 'advise', 'question', 'raise questions about', or it could 'insist', 'redefine', 'highlight', 'expose'. There are many options, and it is satisfying to find the most defensible.

And I remember being nervous before submission that I did not actually have a thesis in my thesis until my supervisor firmly assured me that I did—that sort of self-doubt may be common, so talking it through with doctoral candidates can help them feel more sure that they really are researchers who have an argument to stand by.

Done All That Work—But Has This Thesis Really Got Anything to Say? Strategies to Regain Perspective on Research Contribution

Claire Aitchison

What have I got to say? This is one doctoral terror moment: the fear that perhaps there isn't anything of worth to show for all the years of work. I've never met a student who hasn't experienced this kind of self-doubt—in part fuelled by exhaustion during the final stages, and in part an almost natural outcome of being too close, too fully immersed in the project to be able to objectively assess the merits of the work. However, it is essential that researchers make such judgements accurately since convention demands that the thesis clearly identifies the contribution and significance of the research.

Over the years I've collected a few strategies for helping students gain the perspective needed to make objective judgements and locate this appropriately in their texts. I've drawn on the work of Paltridge and Starfield (2007) for evidence-based accounts of structure and moves within theses; Kamler and Thomson (2014) for writer identity and positioning; Graff and Birkenstein (2014) for activities that help scholars engage in critical academic conversations; and the wonderful Patricia Goodson (2016) for stimulating thinking and writing.

Harnessing the Advantages of Objectivity and Distance …

Even though I am, by first inclination, a qualitative researcher who loves detail and nuance, it is easy to get lost and overwhelmed in too much detail. One strategy to overcome this is to **use tables, grids and figures**, which force simplification. Reducing things in this way requires distance, so that I crystallise my thinking, identify key points and thus see how the parts interrelate as a working whole. This strategy of stepping away from the narrative to condense work into tables is a great antidote to my own tendency for expansive writing.

I **use a metaphor** that I first read in Swales and Feak (2000) to describe this process. Imagine you've been walking in a forest for some months examining the vegetation and have developed an expert, detailed knowledge of the individual trees, bushes and undergrowth vegetation. Down amongst the trees you have a close-up, comprehensive—but narrow—perspective. But in addition, another perspective is required, one that can be achieved only by moving out of the forest up onto a hill overlooking the entire valley. From there it is possible to see the big picture: how the trees congregate near the waterways, where shrubs sit in relationship to other vegetation, where the tall trees stand, the shades and nuances of the whole landscape and their connections to each other. From this distance one is able to make 'high pass' judgements about relationships and interdependencies—to overview the whole territory informed by an intimate knowledge of the detail.

I love this metaphor and use it often, for example, to explain to students how we need to situate work in the literature, or make overview statements about a body of literature or to help us identify claims for significance. But how does one climb up to the top of the mountain to get that objectivity?

Writing About Findings

When working with scholars who need clarity around findings I use this staged activity:

1. On a separate piece of paper, brainstorm what you know now that you didn't before you collected and analysed your data.
2. Order/reorder this list from most important to least important, making sub-sets as necessary.
3. Take the most important three or four findings and complete this table:

    (a) list each finding down the left-hand column, and, working across the rows;
    (b) list the evidence for the finding (e.g., statistical significance, or thematic consistency);

(c) identify how strong that evidence is (strong, medium, purely contextual, weak and so on); and
(d) identify how relevant or important this finding is, to whom/for what purpose?

(a) Finding	(b) Evidence	(c) Strength of evidence (strong, weak…etc.)	(d) Relevance/Importance (high/medium/low—to whom?)
1.			
2.			
3.			

As a tool to double-check hunches and impressions from the data, this grid helps objectivity: it builds confidence about claims. Especially for qualitative research, this strategy forces researchers to think and strategise more clearly. For example, sometimes the strength of evidence doesn't match what is known to be important (from reading or experience in the field); when the information is laid out in this way, it may show the need to return to the data or the literature to investigate this mismatch. It helps deeper consideration about whether the relationship is causal, coincidental, contextual or general.

Connecting Findings to the Literature

I also find tables useful as a systematic approach to building connections between findings and the literature. Here is an example:

1. list key findings down the left-hand column;
2. for each item, ask: 'Who else has had something to say about this?' and brainstorm answers; then,
3. as appropriate, complete rows b–d.

(a) My key findings	(b) Other relevant studies (similar findings)	(c) Other relevant studies (different findings)	(d) The connection … (making sense of your findings *vis-à-vis* the literature)
1.			
2.			
3.			

Answering the 'So What?!'
And tables can be useful for answering the 'So what?' question:

1. Review your findings and list the main ones down the left-hand column (try to stick to only two to four items to help crystalise thinking).
2. Answer 'So what?' and brainstorm answers against each of the four columns to prompt new thinking (you may wish to add/modify these prompts according to your research).

(a) **Key finding**	(b) ***So What?* … for practice**	(c) ***So What?* … for theory**	(e) ***So What?* … for policy**	(d) ***So What?* … for future research**
1.				
2.				
3.				

Take-Home Message, or 'What Was All That About?'

Cally Guerin

It's old and well-worn advice, but worth repeating at regular intervals: make sure you know what the key message is for any given piece of writing. Surprisingly often, at the end of a conference presentation you are left wondering what the main point was meant to be. The same is true of an early draft of a chapter or article. Now, I'm not immune from this myself, and admit to having left audiences somewhat confused more than once in the past.

I think that this confusion about the central meaning of research comes largely from being bogged down in the complexities of data analysis, where vast amounts of information need to be processed and organised. Doctoral writers have often collected piles of data, can be overwhelmed by the sheer mass, and perhaps don't want to leave anything out: every detail seems precious.

But, as Mullins and Kiley (2002) demonstrate, one of the most damaging responses a thesis can evoke in examiners is confusion about the main message the research has established. Holbrook, Bourke, Fairbairn, and Lovat (2007) make a similar point in relation to literature reviews, highlighting that doctoral examiners are looking for the synthesis of ideas into a coherent argument. At various levels of the thesis, then,

it is crucial to be absolutely clear about the central point. Luckily, there are a couple of tried and tested ways to focus thinking about the key argument or central idea.

One useful technique is to make sure that the Introduction to the paper matches the Conclusion. Although this seems obvious, the trick is to avoid repetition but, at the same time, make it easy for the reader to see that the task the writer set out to do has been accomplished, and that the point of the whole exercise is clear. For long-term projects, the main message can shift in emphasis over time as the data are analysed in more detail; hence the value in revisiting Introduction and Conclusion synchronicity at the end of the writing process.

Another effective exercise is to ask participants to write, in one sentence, the main idea they want to get across for the particular piece of writing they are currently producing. Many find explicit articulation quite difficult, but most usually get there in the end. It sounds simple, but is often overlooked as part of the writing process when the focus tends to be on elaborating the discussion rather than being clear about the start and end points. However, when the work really has been fully digested, it is possible to state the take-home message very clearly.

Theory, Critical Thinking and Data Analysis

Choosing the Right Theory Is Like Op-shopping

Claire Aitchison

The analogy that choosing theory is like op-shopping came up years ago in a writing circle and it has stayed with me ever since. I shall elaborate. In Australia, 'op shops' or 'opportunity shops' are charity shops that sell second-hand clothes. Not everyone likes op shopping. Some people prefer wholly new outfits; others make their own gear. In general, however, op shops are a great place to get affordable stuff. But you have to choose carefully. Not everything there is good value … in fact, some op shops carry a lot of junk. Nevertheless, for the discerning shopper, they represent a good option: there is a wide range ready to try on. There are all sorts, sizes, shapes and designs. Op shops don't subscribe to particular brands or labels. You can discover well-known, familiar labels, even exclusive labels, but also obscure and un-branded items. And because op shops are affordable, if you change your mind, it doesn't matter too much—you simply give it back to be recycled again. The item has value, but not to you.

Occasionally you come across something that's almost new, seems hardly to have been taken out of the cupboard before finding itself in the op shop seeking a new owner. One wonders why it has been rejected. Perhaps when the buyer brought it, and later after trying it on at home, found it just wasn't right for them after all. Maybe it didn't match anything else in the wardrobe, or was simply not needed.

Some items are so well used that they look a bit tired and tatty. However, they may still have some value, for example, when worn with the right accessories?

An op shop allows you to try on outfits endlessly—to mix and match across styles and eras, to experiment and test out unusual combinations, to dig out long-forgotten fashions.

I spoke with my doctoral student today and she was having trouble with theory. After initially browsing freely, she'd narrowed the field to Bourdieu and Foucault. But she was hesitating, saying that 'everybody uses Bourdieu' and she wanted something new.

I thought of the op shop and suggested she think about how theories might work together—that she try choosing one for the main outfit and see how the second theorist could complement that. We talked about her purpose—what did she want from theories/theorists; where could she go with them? How did she imagine they could work together to achieve her objectives? But mostly we agreed the answer would come from *trying on the theories* by actually writing the story of the data and then seeing where, if, and how those theories would apply. Perhaps she might be surprised to find they fit well—or perhaps she'll return them to the rack and keep looking a while longer.

Postscript: In keeping with the idea that everything new is old, Cally Guerin drew my attention to this and its reference to the idea that student writers 'try on' different voices in the process of becoming authorial.

What Does It Mean to 'Theorise' Research?

Cally Guerin

Researchers, and especially those working on doctorates, are advised that their work needs to be more than mere description; they must also 'theorise' their work. Many are unsure about what this really means, especially when instructed to 'theorise your practice', so here is my attempt to try and define it.

Doctoral writers generally need to tie their research to existing, well-established theories, for example, feminist theory, attachment theory, social constructivist theory. Such theories act as a lens through which the research is perceived, and often determine the focus of the research.

But, on another level, writers are also required to 'theorise' their findings. This second kind of 'theorising' demands stepping away from the mass of details for a big-picture view of data that reveals its broader meanings.

Attempts to theorise can result in the production of typologies or frameworks, models or patterns, analogies or metaphors. Such high-order thinking is very challenging for most of us—and can also be the most rewarding part of research. It allows for creativity in interpretation, for intuitive thinking, and even a degree of conjecture.

There are three main ways to theorise empirical results: deduction, induction and abduction. It can be helpful to think about how these processes align with research design early in the project.

Deduction works ***from*** (*de* = from) the general to the specific. One way to think about this is as a path that moves in the direction of rule –> case –> result. You begin with the general theory/rule/principle and apply it to a specific case, the context or topic of the doctoral project. The theory might say that, in situation A, B will necessarily result. The researcher gathers data from the specific case and then sees whether or not the general theory holds true. Another way of describing this 'top down' approach is to start with a general rule or hypothesis, examine the evidence of a particular case and reach a reliable conclusion. This approach is good for research that starts with a hypothesis to be tested and causality established.

Induction works in the opposite direction, from the specific ***to*** (in = to) the general. This time we move in the direction of case –> result –> rule. This time the data show that A leads to B which can be explained by this theory or rule. This 'bottom up' process starts with small details or observations, then works up through related issues to establish the general rule or explanation. Such generalising from specific events or cases thus allows prediction of likely outcomes in future, or in similar situations. This approach is good for research aimed at exploring new phenomena or new perspectives on phenomena.

Abduction occurs when a probable conclusion can be taken ***away*** (*ab* = away) from limited information. The process here moves in the direction of result –> rule –> case. Given result B, could this rule/theory explain it? Test against case A to see if it stands. Here we start with the result observed, guess or hypothesise a theory that might explain it, then test that theory against the case. This approach can be helpful when surprising data are observed. Often this is a matter of asking *why* certain results have appeared, a process which sometimes requires creative and intuitive thinking. Importantly, the conclusions of abduction are tentative, based on the most likely explanation, so hedging language is necessary: 'it seems probable that…' or 'it may be…'.

Swedberg (2012) offers the following advice when it comes to making sense of data and attempting to theorise:

> What one observes is typically often covered, but not completely so, by some existing concept. In this situation it is important not to dismiss the difference, and to squeeze one's observations into some existing category. Instead one should zoom in on the difference, magnify it, and explore if the phenomenon does not merit a new name or at least a new description or definition. (p. 18)

This strikes me as a wonderfully liberating way to approach the data and free up the creative and critical thinking that results in 'theorising'.

Demonstrating Critical Analysis: A Paint-by-Numbers Approach

Susan Carter

In my experience of working across-campus with doctoral students, those who flounder at examination generally have the same failing: a lack of awareness of the generic expectations of a thesis. Their writing shows (1) inadequate linkage between problem or research question, literature, methods and findings; and (2) evident ignorance of the framework expected of a thesis.

A paint-by-numbers approach may help students who struggle with the abstract language of genre, linkage, and framework, let alone epistemology. Question, literature, methods and findings must be linked not just in the author's mind but in clear explicit sentences so that a reader can quickly see connections. An audit before submission could include a check of the following:

- The description of the background fits what the study actually found—rewrite if things have shifted and the background now required is slightly different.
- The research question captures the essence of what the study actually finds—if it doesn't, it should be rewritten so that it does.
- The methods section relates to the research question—sentences should explain how.
- Any method discussed and not used has a sentence explaining why it is discussed at all—if there is no reason, it should be removed.
- Theories discussed in the literature review are applied in analysis and discussion.
- Findings are compared with findings from literature—differences and possible reasons are discussed.
- The overall balance of literature, methodology, findings and discussion is appropriate (e.g., about the right % of the thesis is devoted to literature review, methodology, etc., for the discipline).

Behind this apparently simplistic approach sit the issues of epistemology and discipline expectations, and the network of theories about how new knowledge is constructed and accepted by academic communities. But not all students find talk of epistemology the fastest route to seeing what they need to do in writing. Some who do good research and make valuable contributions may not find that explanations of high theory expressed in Latinate terms helped them with writing their thesis.

In the current environment of shorter times to completion, it is sensible to use straightforward routes to successful thesis writing. That does not include the supervisor writing for the student, but can include pragmatic suggestions that might save students from another longish block of revisions after examination. And I suspect that even a paint-by-numbers approach may provide a learning route to appreciating that you always write in a socially restrained situation and for a critical audience, and that meeting expectations matters.

Swamped by Data? Time to Take Control and Manage All that Information

Cally Guerin

In conversations with Ph.D. candidates, I am reminded of how difficult it can be to manage all that data generated by empirical research. It's great when dozens of people are willing to be interviewed for your project; when you receive a 90% response rate to the survey; the chance timing of your fieldwork generates much more material than expected; or serendipity in the laboratory leads to a vast increase in usable results. It's a gift to have so much material to work with; yet, it's easy to feel swamped by all that data and wonder how on earth you will find your way around them, let alone analyse and write about them. The storage and management of data is a key aspect of any research project, and finding ways to do this effectively sets up researchers for writing about it later on.

The Australian Code for the Responsible Conduct of Research (2007) has lots to say about the management of research data. Section 2 specifies that research data and primary materials must be retained for at least five years after any publication resulting from that data, but this may be much longer if the data apply to clinical trials or have heritage value. All data must be stored in a secure location. If the research generates very large files, or is particularly sensitive in terms of confidentiality, intellectual property or potential commercialisation, it may be necessary to make special arrangements. However, for many doctoral writers, 'secure storage' just means a password-protected file on their university computer, backed up on the university's server. If the research involves other kinds of artefacts or material objects, again, a locked cabinet in a locked university office is often enough. The data also need to be in a 'safe' place, not at risk of damage from flooding, for example (I could tell you about what happens when the basement holding all the central computing facilities meets a burst water pipe…). Reliable record-keeping goes hand in hand with storage concerns. Record-keeping might seem boringly pedantic at the time, but can be invaluable later on to ensure easy accessibility and enable the researcher to describe how the data were collected, organised and stored.

The process of saving data and putting it into various folders begins the first level of analysis. Choices at this stage about categories to employ and how to assign items to the folders will later inform how that data and the relationships between various items are perceived; the names of those folders and subfolders may even become the headings and subheadings of chapters and sections. Of course, it's possible to change the categories as familiarity with the material develops.

One of the important messages here seems to be 'use long and informative names for files'—a year or two later it can be hard to remember what that cryptic notation means… and it's not only important for the current project: the origins and labelling of data can also be crucial if other researchers later use that data for further research.

Lots of universities have helpful templates to create an ordered, sensible approach to the task of managing data. You can find examples on the Australian National Data

Services (www.ands.org.au) website. Just as ethics applications force researchers to think through what they want to do and why, these templates ensure careful consideration of what information is likely to be gathered and how it can be organised in order to be retrieved when the time comes to analyse and write about it. Templates usually include sections covering things like the forms of data to be collected; considerations about file naming conventions and version control; ownership of data; durability of storage forms; access rights; and retention and sharing of data. A systematic process at the early stages will make the writing much more straightforward later.

What to Do with 'Leftover' Data?

Cally Guerin

On winding up a research project recently, I got to thinking about the ideas and data that didn't make it into final publications or conference presentations. After collecting survey responses and focus group transcripts, we looked over the findings and divided it into publishable chunks. Then for each paper we took the data that were relevant to that topic, analysed it thoroughly, and decided what the main argument could be—that is, what is the new knowledge gained from that part of the research? But there are still a few intriguing bits and pieces of data left over. That brought home to me how often doctoral writers are faced with ideas and data that don't quite fit into the scope of the doctorate. To avoid feeling that work is 'wasted,' it is helpful to think about how those leftovers might be used. Sometimes these leftover items of data stay in the researcher's mind, hinting that there is more to be said about the topic, niggling away in the background and refusing to be put aside.

I firmly believe that there is a place for the intuitive hunch in research, the idea that attracts attention even when it is not fully worked out, the idea that seems to be left over from the main project. I have taken to heart Maggie MacLure's advice in this regard. She writes about data that 'glow', by which she means 'some detail—a fieldnote fragment or video image—[that] starts to glimmer, gathering our attention' (MacLure, 2010, p. 282). MacLure provides us with an example of how she works with such data in 'The Wonder of Data' (2013).

These glowing data points tell us something interesting, but maybe not in relation to the current research project. Or perhaps the glowing data stand out from what's already been said, not contradicting the main argument, but moving off on another tangent. It might be something really interesting, even though it does not fit logically alongside the central point of the thesis or articles that make it to the light of day.

When writing for the 'DoctoralWriting' blog, I often find myself exploring ideas that start out tiny, and maybe grow into a blog, and occasionally continue to blossom into a full-sized research project. For doctoral candidates, publishing one's work through blogs is not always straightforward and should be approached cautiously. But perhaps a similar process of writing up short pieces that might later be revisited

can be a useful practice. This procedure has the advantage of saving left-over data, of encouraging ongoing writing habits.

Perhaps the possibility of confronting leftover data is more common in qualitative research, for example, where interview participants might expand on related ideas that are not quite directly on the main topic of the formal interview questions. I remind students that nothing is ever wasted in the work they do towards their doctorate, and suggest that they keep any extra ideas that don't seem to fit into the main thesis in a separate file for the future.

Specific Parts of the Thesis

Writing the Acknowledgements: The Etiquette of Thanking

Susan Carter

Acknowledgements pages show the essence of the thesis author and their experience. If you look through a dozen or so at a time, you will hear the screams, the manic laughter, and catch the sombre tragedy and awe and agony that underpins the doctoral lifespan.

Acknowledgements are non-consequential in that they are not really evaluated, unlike the rest of the prose students have laboured over. Some acknowledgement pages give away the secret of their authors' difficulty with formal prose, and it doesn't matter—by the time anyone reads them, the author has been found acceptable. But acknowledgements do matter because, in amongst the celebration, the right people need to be thanked in the right way.

Acknowledgement pages vary considerably. Most thank funders, supervisors, close colleagues and family. Possibly supportive friends. This means it is effectively a snub if someone important is not thanked.

Typically the structure moves from thanking the most formal support to the least formal, as detailed above—funders, supervisors, other academics, colleagues, and finally family. This makes sense according to the logic of incremental progression because the informal thanks to family are often the most heartfelt. Close family members are often the people who gave the most (although some supervisors are likely to feel this is not true).

It is important that a student acknowledges the formal carefully, though: any person or institution that has contributed funding to the project, other researchers who have been involved in the research, institutions that have aided the research in some way. They should also acknowledge proofreaders and editors—that is a requirement at the University of Auckland where I work, and a good one in terms of honesty about authorship. Such formal thanks are usually in the first paragraph or two.

Yet acknowledgements are a space owned by the author: I have seen people thank their dog for sitting at their feet for hundreds of hours, the cat for its companionable choice of the thesis draft as the spot for a nap, and God for creating a magnificent universe available to be studied.

It is possible to thank people for specific help throughout the thesis, too. I like doing this, because it cheers me up to remember the kind, wise colleagues who have helped me along with my thinking. If footnotes are used, the work can be done there, for example, by stating: 'I am indebted to xxx for several discussions that helped me to focus this section'. Without footnotes, provision of a 'Name, personal conversation, date' reference does the same work. Students may choose to namedrop in these internal thanks too: if a big name in the field gave feedback after a conference paper or in conversation, acknowledgements strengthen the student's academic insider status.

Acknowledgements vary in length, and the effect of a very long acknowledgement—I have seen a nine-pager—is to dilute the thanks. I have also seen one that simply lists five names, which was blunt, but powerful.

So it is good to start an Acknowledgements draft within six months of submission, and revise it for the full satisfaction of a job well done on graduation, with all dues paid. The usual structuring principles apply: those who gave most should be given the most thanks. Supervisors will know the sad truth if the cat gets more lines than they do.

Thanks are best when concrete. I really like thanks to supervisors that carry a sense of who they were in the drama, like 'My supervisor, who kept a sense of humour when I had lost mine'; 'my supervisor, whose maddening attention to detail drove me to finally learn to punctuate prose'; or 'my supervisor, whose selfless time and care were sometimes all that kept me going'. A precisely worded acknowledgement is like a perfectly chosen gift. It fits. It matches.

Most supervisors tend not to give advice on acknowledgements, because they expect to be thanked, so it feels pre-emptive. Perhaps acknowledgements are a place where academic advisors with expertise in rhetoric could give objective advice on tone and balance.

Writing a Thesis Abstract that Will Impress a Potential Examiner

Claire Aitchison

When the thesis becomes available to the public, apart from the title, the Abstract is the most widely read. But way before then, the Abstract needs to win over the target examiner.

Perhaps because the doctoral Abstract is so often written in a hurry when candidates and supervisors are immersed in the final stages, exhausted and in a rush to

towards examination, inadequate attention is paid to this small, but crucial, piece of writing.

Imagine receiving an invitation to examine a doctoral thesis. The email, probably a standard grad school template, is likely to begin by buttering you up with some generic comments about your reputation or expertise. It might include official forms with examination criteria, instructions and procedures. It's likely to remind you of the requirement to work to a timeframe—and of the (very) small financial reward for undertaking the task. It will be accompanied by the thesis Abstract. So, if you were that potential examiner, what would you like from the Abstract to help you decide whether or not you want to take on the task?

I'll wager that you want pretty immediate clarity concerning what the thesis is about: what the research was aiming to do, what literature, methods and theories were employed, and what were the outcomes or the findings. Having said that, if you are an expert in the field, you'll also want to know what is special or unique about this research that would encourage you to read yet more on a topic that you are already so familiar with.

Most of the advice books indicate that the ***content*** of the Abstract should include, at a minimum, topic, literature, method, findings. In most cases, the study will be explained by giving a clear (and early) statement of the issue or problem under investigation, the literature that was brought to the investigation, how the research was undertaken and what was found (including the significance of these findings). Some disciplines and/or kinds of studies may require different levels of detail or additional information, such as the central argument (common in cultural studies, for example), and/or the theoretical framework. Besides the content outlined above, the Abstract should make clear what kind of thesis it is, for example, by indicating if the thesis has a non-traditional structure, a special use of voice, presentation, or structure such as an exegesis or a series of papers.

At the sentence level, some Abstracts refer to ***the research***, while others reference the thesis (***or dissertation***) ***itself***. This distinction will likely impact the choice of verb ***tense***. For example, descriptions of the research may use the simple past tense (*The research showed that…*), whereas commentary on the thesis is likely to use present simple tense (*This thesis explores…*).

Some disciplines favour longer Abstracts up to two pages in ***length***; however, in my opinion, a short Abstract is preferable. The judicious use of ***keywords***, disciplinary or ideological 'markers', will help provide short-cut clues to the kind of research it is, and make the thesis searchable. But at the same time it's important to be as accessible as possible: well-structured paragraphs with topic sentences should break the text into clear segments. As with any Abstract, focussed, precise writing is the way to go. Ideally, sentences will be dense with detail and relatively sparse in 'padding' (i.e., adjectives and adverbs).

Time markers and ***location-specific indicators*** are worthy of special care. For example, state that the study took place 'during 2019' rather than 'recently'. A Ph.D. is an international qualification, so local identifiers rarely work: it is preferable to replace 'Western suburbs' with 'fringe suburbs with lower socio-economic status'.

The process of writing the Abstract can help candidate and supervisor identify the ***strengths*** and 'sales points' of the study. An Abstract should play to these. For example, if the researcher has developed a new way of doing something, or modified an existing method or approach, then indicate this along with other significant 'findings'.

Irrespective of the discipline or kind of study, the Abstract should give ample attention to the findings; up to 60% of the Abstract can be devoted to presenting findings *and* their ***significance***. This segment can be especially difficult to write because it requires a particular kind of authorial voice and confidence that sometimes is only just developing in the very final stages of candidature.

It's the old adage that first impressions stick. A well-written, well-structured Abstract provides a sense of the researcher and the research. If the Abstract is neat and crisp, comprehensive and well written, if it provides the essential elements that enable one to make a judgment about the thesis, then, hopefully, a potential examiner is already starting to engage with the task.

How Long Is a Thesis Introduction? Changing Thesis Structures

Cally Guerin

One of my doctoral writing workshop exercises compares real theses to the generic advice on writing theses. Participants bring along theses that are regarded by supervisors and examiners as examples of good research and writing. The process is designed partly to encourage Ph.D. students to have a clearer picture in their own minds of the end-product they are working towards, and partly to provide ways of articulating standard structures. Increasingly, I find that the theses students bring along don't quite match the standard advice.

The first chapter of a thesis, for example, is usually labelled 'Introduction', but what that means can vary surprisingly in terms of length and what is included. In the past, I've worked with a list of components that could (should?) be included in this opening section:

- background information;
- rationale for research;
- scope of project;
- research questions and aims;
- maybe something about methodology and/or the theoretical framework;
- an outline of chapters.

I suspect that most writing advisers and supervisors have similar lists in their heads. But how and where do these elements actually appear in the thesis? For example, where do they sit in relation to the literature review?

The Introduction elements might all be covered in a relatively short 'mini chapter' of 6–10 pages. This is then followed by a separate, considerably longer chapter that provides a big Literature Review or detailed examination of the context, background or theory underpinning the project.

Alternatively, the Introduction elements might act as brackets for the first chapter. The chapter starts by setting out the problem or issue and providing background context, but then moves into a lengthy, detailed examination of the literature. After this, the chapter returns to details of the specific project that will be reported in the thesis, its questions, aims, methods and finally, chapter outline. That is, 'Introduction' might include a substantial literature review before we know much at all about the specific focus of this particular project.

(Personally, I like the mini-chapter format so that I know up front what this project is about; no need to keep it a mystery for the first 30 pages, in my opinion. This use of a short introductory chapter does not appear to be linked to specific disciplines.)

When I look at successful theses, the elements listed above are not always obviously on show. Sometimes they are disguised behind other language; sometimes they are simply not present. For example, we usually see the chapter outline, but not always; research questions or aims can be hard to identify; theory and methodology may not be very prominent in what is labelled 'Introduction'. While writing a doctoral thesis has never been a 'painting-by-numbers' exercise, it seems that variations on the basic patterns are more and more common. Maybe these variations have always existed within the broader framework of disciplinary expectations. Perhaps the apparent loosening up of examiners' expectations partly relates to the changing nature of the Ph.D., in which the topics and types of Ph.D.s no longer fit neatly into the traditional structures—different kinds of projects demand different forms of writing.

Conventional advice is useful as a reliable guide, but should not be presented as a rulebook. If something else makes sense in a particular context, follow the internal logic of the situation. Maybe we need to let go of some of the traditional advice when updating the next edition of our 'how to write a thesis' manuals.

The Literature Review for Beginners: Writing While Still Uncertain

Susan Carter

Writing about literature can cause confusion and frustration for new Ph.D. candidates. How can they start 'writing a Literature Review' in the first few months of candidature when they are still not sure of what they are really looking for, and may not have finalised the scope and aims of the thesis? It means building a Literature Review without a sure sense of its final, definitive purpose.

Despite this, reviewing the literature is commonly the ***entry point to doctoral writing***. Frequently it is begun early in the first year in order to stake out the research landscape. The main purpose of reading early is to ensure that the project hasn't already been done, and to better understand methods commonly used. At the same time, novice researchers will absorb the jargon and conventions of the discipline, and should be encouraged to do this consciously.

Using some form of referencing software, they should at least summarise what they read so as to remember who said what: writing must accompany reading. The more this early writing includes initial responses, i.e., 'evidence of their critical analysis of literature', the more effort will be saved later.

Having a *purpose* for writing can help candidates unnerved by contingency. Theses ***make generic moves***, each of which needs support from literature. The entry-level doctoral student could begin with a plan of how literature will buttress the final thesis. The idea is to plot out the story that the literature must support.

The Introduction usually establishes a ***problem, limitation, or lack of understanding***. Literature provides evidence that a gap exists in understanding about something that matters, identifies exactly where, and shows the topic's seriousness. That gap is often not clearly defined at the start of the project, especially in non-STEM disciplines. However, whenever the topic problem is mentioned, it can be included in what will eventually become the beginning of the Introduction. Here, the 'best' literature will ***show that the problem really matters***—that will strengthen the thesis's significance.

Then ***methods used*** will be defended with literature. Detail about previous approaches will build the argument for methods used—reporting these from the literature requires looking for other studies' limitations as well as strengths, then writing the story of what seems useful, and what seems less so, to the current project. Having a set of evaluation criteria enables even early reading to be fitted into a coherent plan, described in a way that is likely to be useable. Hart (1998) spells out the kinds of questions that literature ought to answer. Some questions might be:

- Are any definitions useful?
- Is their problem the same as mine?
- Are their methods good?
- What supports my ideas?
- What raises new ideas or disagrees with mine?
- What are the limitations?

Additionally, candidates can look at each publication's prose for ***exemplars***. Does it clearly articulate the problem, and the argument? Is it succinct and convincing? How does it defend methods and articulate a methodology? What vocabulary is used? How does it handle theory? Strong prose structures at the level of paragraph and sentence can be emulated by novice researchers.

If you are in a discipline that uses direct quotation, accumulating useful quotations is useful—and while picking those that express ideas eloquently, notice the syntax for how this is achieved.

It still won't be easy, but the candidate could begin by itemising ***what literature will be needed in each section***—that gives one way to mitigate the panic that some candidates feel when writing about literature while still unsure of their final topic.

Literature Reviews—Trust Yourself!

Cally Guerin

Doctoral students often start out feeling obliged to summarise everything that has ever been written on their subject, and to do so in a politely deferential manner. Yet it is necessary to stand back from all that information and tell a story that puts the student's research right at the centre in the starring role. To explain this, I return again and again to the 'hands on hips' stance that Kamler and Thomson (2014) put forward in a wonderful chapter entitled *Persuading an octopus into a glass: Working with literatures*.

Hands on hips is a great image for the authoritative stance that needs to be taken up in the huge shift from undergraduate to autonomous researcher. It helps to picture oneself undaunted by overwhelming information in the literature and making some judgements about what is important, interesting, valuable and/or topical. With hands on hips it becomes easier to pose questions such as: How would I categorise all this information? What do I think about it all? How do I see those elements linking to other papers, theories and arguments in the field? What have I got to offer that others should listen to? Where is my value-add in all this?

Wisker (2005, p. 93) hits the nail on the head when she says that one purpose of a Literature Review entails *entering into dialogue* with the discipline. It can take a while, though, for postgraduates to believe in themselves as scholars with something useful to say to all those other published researchers around the world who are working in the same field. Yet the expectation is that doctoral writing will speak to the discipline at a global level.

So it's necessary to talk to doctoral students about taking up the hands on hips stance in their Literature Reviews. However, I've also been pushing them to trust their own knowledge of the field much more than they often seem to do—and here I may be on somewhat shakier ground.

I encourage students to stand back from their copious notes and highlighted PDFs, and take control of the overarching story. Then they can start listing the main topics they need to address in the literature review. Doctoral writers can trust themselves to know what the key themes are after all the reading they've done; they will remember the main concepts that must be included; they will recall the ideas that surprised them, shocked them, or opposed what they had previously believed. I really do think that they can trust their own understanding of the field for this part of the process, rather than slavishly patching together summaries of what everyone else has already written about the topic. Of course, it's extremely important to go back and confirm

the precise names, dates and facts to ensure that the information in the Literature Review really is accurate and to acknowledge where ideas originated.

Is it dangerous to encourage students to trust themselves this much as they launch into writing Literature Reviews? Am I going to regret this a little further along the track if they start imagining that they are experts on the topic long before they really know enough? I'd hope that this would be the beginning of establishing a confident, scholarly voice as an author.

Literature Review: Hands on Hips or Smash and Grab?

Susan Carter

The metaphor I use when teaching how to review the literature is home invasion. When you are reading an article, you want to get into it quickly, spot what will be valuable to you, grab it, being careful not to damage it (take the page numbers and reference carefully) and get out fast. You don't want to waste time admiring anything too large to carry off—if you can't make it relevant to your topic, then cut and run with just what will fit. You might note what interests you in case you get a chance to return some other time, but you need to stay alert and get out as fast as possible.

Of course it makes sense to spend time in text that is enjoyable or valuable—it's one of the pleasures of being academic. But I recommend a smash and grab approach because most doctoral students are overwhelmed by *how much* literature is out there.

Many students are reading in a language other than their first language, so the tsunami of what needs to be read is terrifying, sometimes literally sickening. Even when your first language is English, academic writing is pretty challenging to read and digest. It is too seldom pleasurable.

It is common to suggest to doctoral students that when reading they skim, skip, or speed-read first to identify what must (groan) be attentively read cover to cover and possibly re-read. The home invasion metaphor version of sullying into literature cheers me up because it is rowdier and less doggedly systematic than 'skim, skip, speed-read.' Students cheer up with the thought of pillage…you are *not* at the mercy of other authors and can assume Kamler and Thomson's (2014) hands on hips approach. And it captures that muscling in required to psych yourself up as a reviewer of literature who has control.

The metaphor extends: while you are making this grab-and-go, check out the décor. When you find academic writing that is a pleasure to read, often this is because it does something special stylistically. We often learn how to improve our own writing by looking closely at how others achieve eloquence.

When we teach, although it is crucial to explain the various academic requirements and the ways writing demonstrates meeting them, we also suggest ways to make tedious work seem doable. Humour and irreverence help to keep doctoral writing grounded in reality.

Crafting Conclusions—More Than a Summary of Research

Cally Guerin

Working with a student in the final throes of completing his thesis, I was recently reminded about the importance of writing Conclusions. This very challenging part of thesis writing comes at the point when the Ph.D. candidate is often exhausted by the whole process of the research degree, under enormous pressure to meet deadlines, and even heartily sick of the topic.

The concluding chapter of a Ph.D. thesis is often surprisingly short—sometimes no more than 6–10 pages. Perhaps this reflects the exhaustion mentioned above. Yet the Conclusion plays a crucial role for the reader in reflecting back on the entire project. Of course, the thesis 'readers' are the examiners: Mullins and Kiley (2002) make it very clear that it is dangerous if an examiner reaches the end of the thesis and feels unsure what it was all about. The Conclusion needs to make it impossible to miss what this thesis contributes to knowledge in the discipline, explicitly stating and drawing attention to the central message of the whole project.

It can be very helpful to go back to the original aims/objectives/hypotheses outlined in the Introduction to show how each research question set up at the beginning has now been answered. Repeating those initial questions in the Conclusion can make it easy for the reader/examiner to see that the research has indeed achieved what it set out to do. Depending on the disciplinary conventions, presenting the aims or questions as numbered statements or dot points—as a kind of checklist—can highlight that each of these points has been addressed.

In situations where the thesis is presented as a collection of articles, the Conclusion is even more important in its power to bring together a coherent, unified whole. Even though each article/chapter has its own Conclusion (sometimes just the last paragraph of the Discussion section, depending on the intended journal), the Conclusion of the thesis needs to do meta-level work on top of summarising the findings.

This is the moment in every thesis to address the implications of those findings—the 'so what?' question. What does it all mean? Why does it matter? Finally, after all that work, it becomes clear where the whole argument is going to end up.

In the process of reflecting on the overarching meaning of the research, it may be necessary to return to the previous chapters and scrutinise what has been presented there. Sometimes it is necessary to adjust the content or interpretation of earlier work in light of what is known at the end. The emphasis may have shifted for the overall project along the way, rendering some passages of writing redundant or others requiring more prominence.

I particularly like the idea that the thesis needs to end on a strong note. One exercise I do in writing groups is to look at the final sentence in several theses—sometimes a very illuminating insight into the state of mind of the candidates at the end of their projects.

There is a lot of useful advice on Conclusions available in academic writing textbooks. Paltridge and Starfield (2007) have a very useful chapter that I'd recommend

for all doctoral writers (not just those writing in a second language, as the book title suggests). They include some good pointers about identifying the limitations of the research and therefore being wary of how grand the claims can be now that the evidence has been presented throughout the thesis. They also give valuable language tips.

How to Make a Great Conclusion

Claire Aitchison

I love a good Conclusion. There's nothing more satisfying than reading a good paper that finishes strongly, but what a let-down when there is a poor—or non-existent—Conclusion!

We know that most of us read the Abstract, scan the Introduction and then move quickly to the Discussion and Conclusion sections when we read research papers (Feak & Swales, 2011, p. 40). Whether it is a thesis or journal article, the Conclusion is really important, so how can we make sure it's as great as it can be?

I think there are some useful processes that can help ensure a successful Conclusion. Because a Ph.D. thesis is such a long time in the making, it is useful to begin building the Conclusion chapter over months and years—at least from the time data are being collected and analysed. I suggest the following steps.

Build a 'Conclusions Bank'

1. From mid-stage in your Ph.D. make a new file called 'The Conclusions Bank' and throw into it inspirations and 'big ideas' as you construct your thesis. For example, this is the place you can dump insights that come to you during data analysis or when reading the literature, and it's a good place to store chapter leftovers.

Don't worry about organising this information until you have finished all your data chapters and you are ready to begin your Conclusion. It can be an absolute delight to find this treasure trove of ideas as you run out of energy and inspiration towards the end of your candidature.

Within the Conclusions Bank, make a separate section into which you copy and paste each of the Conclusion sections from each of your chapters as you write them. Having these together enables you to better synthesise these parts and see the big picture required to make the 'big claims for significance'. Remember that a key task of a Conclusion is to identify what it is that makes the whole greater than the sum of the parts. It's a big job for a totally blank page and an exhausted mind!

2. At some point toward the end of your writing, remove yourself from your work and freewrite (Elbow, 1998) to these questions:

- ***So, what have I found***—and why does it matter?
- ***What do I know now, that I didn't know before*** (e.g., before I read the literature or before I collected and analysed the data)?
- ***Who cares?/Who should care?*** (e.g., are these things of value for practitioners, for policy or theory, for improving how we collect or analyse data)?
- ***What do I know that no one else knows?*** (e.g., things that arise from my unique context or data sets).

The Disappointing Conclusion

As an editor or examiner, one of the most common failings I come across is a Conclusion that looks and reads as if the author has run out of steam. The Conclusion is way too brief, sloppily written—and incredibly disappointing. Some examples include:

- a failure to overview the whole project, perhaps just focusing on one aspect;
- a collection of statements disconnected from the literature;
- 'soap box' announcements or imperatives for action that don't necessarily flow from the evidence presented. For example, chest beating on issues not at all substantiated by the research: 'Thus teachers should blah blah blah…';
- a lazy reiteration (even duplication) of statements from the Abstract or the Introduction;
- a bland re-summarising of the research and/or listing of findings that lacks finesse and nuance;
- a failure to highlight the 'take-home message'—be that the key argument, key finding(s) or implications.

What a Conclusion Should Do

Remember that a Conclusion may be read as a stand-alone item. So it needs to inform the reader of what was done, how and why, what was found, and why it matters. It can be a challenge to reiterate all of this succinctly and without boring repetition; nevertheless, that's the task of the Conclusion.

Conclusions should do some, or all, of the following:

- remind the reader of the research problem and purpose, and how they were addressed;
- briefly summarise what has been covered in the thesis;
- make some kind of holistic assessment/judgement/claim that pertains to the whole project (i.e., more than a descriptive summary);
- assess the value/relevance/ implications of the key findings in light of existing studies and literature;
- 'speak' to the Introduction;
- outline implications of the study (for theory, practice, further research);
- comment on the findings that failed to support or only partially support the hypothesis or research questions directing the study;
- refer to the limitations of the studies that may affect the validity or the generalisability of results;

- make recommendations for further research;
- make claims for new knowledge/contribution to knowledge.

(Adapted from Belcher, 2009; Paltridge & Starfield, 2007; Swales & Feak, 1994.)

How is a Conclusion Organised?
A Conclusion is sometimes described as a mirror image of the Introduction, in that it moves from the particular to the general. There is another sense in which the Discussion and Conclusion section is the reverse of the Introduction: an Introduction contains extended discussions on the previous existing research and literature on the topic, and relatively little on the current research. In the Conclusion section, the new research, positioned against existing knowledge, is the primary focus. In the concluding section, existing literature and previous research is used for confirmation, comparison or contradistinction (Swales, 2004 cited in Paltridge & Starfield, 2007, p. 147).

Every thesis is different and writers need to decide what suits their particular needs, writing style and methodological approach; however, being aware of common patterns and genres can help writers make judicious decisions to suit their own thesis. We know, for example, a Conclusion section in a thesis commonly follows these moves:

- an introductory restatement of research problem, aims and/or research question;
- a summary of findings and limitations;
- practical applications/implications;
- recommendations for further research.

Given that we know that the Abstract, Introduction and Conclusion are often the only parts readers bother with, it is essential that the Conclusion *concludes* the paper in a succinct and punchy fashion. You want it to have authority and impact. You want quotable sentences. So don't leave it too late to try strategies like those suggested so that you can maximise your changes of ending on a high.

My Questions Now: Preparing a Thesis Conclusion

Cally Guerin

The Conclusion is the moment when examiners are assessing whether the whole text has persuaded them that, yes, this thesis makes an original and significant contribution to knowledge and is therefore worth a Ph.D. Yet, as Trafford, Lesham, and Bitzer (2014) point out, a surprising number of theses fail to make a direct statement about the originality of the research and its contribution. While it is still possible to succeed in exhibiting 'doctorateness' without fulfilling the standard requirements, why not make it as easy as possible for examiners to see that the thesis meets the established criteria? The Conclusion needs to state what can be ***deduced or inferred*** from the material presented.

As Wisker puts it in *The Good Supervisor* (2012, pp. 431–432), the Conclusion ought to 'clarify the effects and the importance of what has been found, what it means, why it matters and what might be done with it'. I want to add a series of questions that might be used to think through the significance and implications of the research.

Conclusions can be particularly challenging for students working on a thesis by publication, or a thesis in which each chapter reports on a separate experiment, case study or (as in mixed methods research) approach to the central research question. I devised the following series of questions to guide doctoral writers in thinking through the big picture and reaching conclusions about their research.

- What is the relationship between the various studies? What is the most important idea to come out of Study 1a and out of 1b? And then what is the overall message from all that information and analysis?
- What did Study 2 then add to our understanding?
- What did we learn from Study 3 to add to that?
- Now that we know all of this, what does the world need to know about this topic overall?
- What is new about this thesis? What do we now know that we didn't know when you started?
- Why is it important? And what policy recommendations do you want to make now that you know these new things?
- What excites you about what you have learnt during this research? What was surprising? What do you care about, and what do you want others to understand now?

A structure for thinking through the issues can be helpful, especially when so many doctoral writers are exhausted when they get to the end of their projects (the requirement to write a confident final sentence to leave resonating in the examiner's mind might seem like an impossible task!).

The Last Word in Doctoral Writing: Mechanics of Last Sentence Rhetoric

Susan Carter

In a recent writing class, we gathered the last sentences of journal articles that participants thought were really strong, and analysed why they worked so well. This exercise focuses on the mechanics of language for rhetorical force, something that takes doctoral students into a healthy space as they develop their writing's style and voice.

The last sentence of any article, thesis, chapter has an important role: farewelling readers in a way that is likable and memorable. Readers should leave convinced of the take-home message, and, preferably, impressed enough to cite it.

The group included people from STEM and non-STEM disciplines—we were well aware by this stage that there were disciplinary differences in preferences for academic writing style. Group analysis defined the rhetorical mechanics of what we liked, and why. So what did we like as an inter-disciplinary group?

Short sentences with short words in them were recommended for their power. Rhetorically, they really did have a sense of finality. One last sentence, '*Nothing else seems to be on offer*' (Young & Muller, 2014, p. 63), had a gloomy touch of realism, but also shrewdly suggested that the topic needed more research. We liked the use of a common truism for the final sentence.

'Poised' and 'pursued' drew approval for this last sentence: 'Patient-centred outcomes research is poised to substantially change how clinical questions are asked, how answers are pursued, and how those answers are used' (Frank, Basch & Selby, 2014, p. 1514). The reader liked 'the persuasive and goal-directed tone that would have helped some fairly die-hard 'positivists' see value in stepping out of their comfort zones'. We liked the counter-balance between the instability of being 'poised' and the massiveness of 'to substantially change': a dramatic pivotal moment of consequence makes a good cliff-hanger closure.

Our list of last sentence rhetorical strategies to date, then, coming from a fairly small group, includes:

- punchy, short, pithy;
- evocative vocabulary;
- rhythmic and rap-like;
- cliff-hanger tension;
- pointing to the future.

Within that group, people from all disciplines found this a helpful exercise as they approached building a firm ending to their articles or chapters.

Preparing Your Thesis for Submission: What to Look for When Editing at the Whole-of-Document Level

Cally Guerin

There is a lot of good advice available about editing and proofreading. In Australia, the Institute of Professional Editors has very detailed information about the kinds of details that professional editors look for, including the *Australian standards for editing practice*. This list and the 'Levels of Editing' link provide a really helpful range of elements that should be checked before submitting a work for examination or publication.

While many writers think 'editing' relates to clarity of expression, grammar and punctuation, there is another whole area of thesis editing: the formatting and layout

of the whole document. The unity and consistency at the whole-of-document level might seem less important than all those words explaining the theory, methods, findings and conclusions; however, I think it's essential to recognise that the visual elements of the writing affect the reader. Just as a paragraph break at the wrong moment can create misunderstanding about how the information fits together, so, too, a sub-sub-heading that looks like a sub-heading can result in misinterpretation of the significance of the material. But it's very difficult to notice these issues when reading for sense and clarity, or correcting grammar—it must be undertaken as a separate stage of the editing/proofreading process.

I've been working on a checklist for the details that need to be in place at the level of the whole document.

1. ***Completeness***: Are all the necessary parts actually present in the document and in order? For example, are there any missing sections from chapters, and have all appendices been included and accurately numbered? Is this definitely the most recent version of the document? Have all changes have been included and integrated into the document?
2. ***Formatting***: Is the layout consistent? Check margins, indents, spacing between paragraphs, spacing after full stops.
3. ***Headings and subheadings***: Do they all exactly match the Table of Contents? Is it easy to visually distinguish between levels? Is the font and size consistent across heading levels in different chapters?
4. ***References***: Are all the references in the text also in the bibliography, and vice versa? Are they all accurate and complete? (Note that bibliographic software is not unerringly reliable.)
5. ***Illustrations/Tables/Graphs***: Is there consistent formatting of captions? Check the font and size as well as the layout. Then check capitalising and abbreviations (e.g., Fig. or Figure) are also consistent. Are captions consistent with any text inside the graphic? Check numbering of tables and figures is in order with no numbers left out. READ the text inside each graphic for accuracy, spelling and grammar (it's amazing how often there are errors inside the tables).
6. ***Page numbering***: Is cross-referencing between chapters accurate? Check numbering follows correctly between chapters if working on individual documents.

Of course, working with a template from the beginning can solve some of these issues, but even so, changes and revisions can introduce mistakes over the years of writing a Ph.D. It's worth checking that all is in order: examination is likely to be much less stressful when there is certainty on submission that the formatting is consistent.

Reading Theses to Write a Thesis

Cally Guerin

One of the major challenges of doctoral writing is that a thesis doesn't usually look much like the texts that Ph.D. candidates read. For many students, the first six months or so is spent reading masses of articles, chapters and books. Then they turn their attention to writing a markedly different genre. Even for those writing a thesis by publication, the document submitted for examination includes sections that do not resemble what they have been reading during candidature.

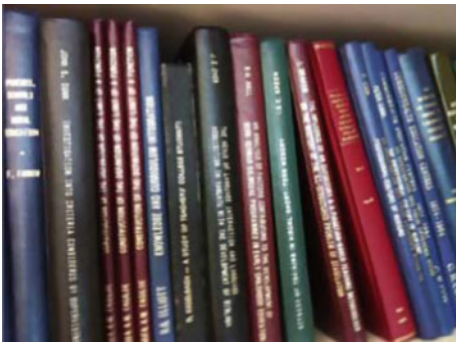

Photo by Cally Guerin

Usually there is much more information about methods in a thesis than is common in the articles published by most disciplines. Some disciplines accommodate the basic science-based IMRAD model (Introduction, Materials and Method, Results, Analysis and Discussion) for the thesis, but this is not relevant everywhere; instead, choices need to be made about the number and order of chapters. Judgements need to be made about what works as a separate chapter compared to what sections are better combined into one chapter—and if combined, how much space or how many words should be allowed for each section? Does the concept of a chapter labelled 'Literature Review' work for this project? Or does literature need to be threaded throughout the thesis where relevant? There is no set number of chapters, and every project will take its own shape.

It can be useful to encourage students to read a few recently examined theses by other candidates in their field. While it is also helpful for students to read their own supervisor's thesis (as is often recommended by supervisors), sometimes they are so old that the options and university regulations for presentation have changed considerably since they were submitted. The questions below can help current students notice various features of theses.

1. Is the Table of Contents formatted to ensure that the story of the research leaps off the page? What makes contents pages easy or hard to read? Is it obvious at a glance where each new chapter begins? How are the levels of subheadings

indicated—with indenting, bold and/or italics? How is capitalisation used? Is there a line of dots leading to the page number?
2. What do individual thesis pages look like? Is the font big enough, are the margins wide enough and the space between lines appropriate? Is there too much or too little white space on the page? Some universities provide a template but many candidates need to develop their own.
3. Is there a separate short Introduction outlining the project before the first big, substantial chapter? Or does the Introduction include much of the Literature Review?
4. Are all chapters the same length? (Hint: they don't have to be—sometimes it makes sense to include a shorter section that stands alone.)
5. What is going on in the Conclusion for the whole thesis? Does it simply summarise what's already been said in the chapters, or is there a whole lot more included here?
6. Is this thesis perfect, or simply good enough to have been awarded the degree?

Reading other people's theses is a very useful strategy to help authors focus on the elements that distinguish a thesis from other genres. After all, it can be very difficult to write something without a clear sense of what the end-product needs to look like in terms of shape and content.

Choosing the Examiner: It's in Everyone's Interests to Get Students Involved

Claire Aitchison

In Australia, as in many other countries, doctoral examination is a 'single blind' peer review process: the examiner is given the name of the candidate whose work they are examining, while the Ph.D. student is blind to who their examiners are, until afterwards—if at all. (Examiners are often given the option to retain their anonymity even after the outcome and examiner reports have been submitted.) While students may never know the identity of their examiners, and each examiner operates without knowledge of the other(s), the supervisor is intimately involved in examiner selection.

Rules and practices around examination vary but, in most cases, it is the supervisor who approaches potential examiners to inquire if they are interested and available to examine a student's work. Generally in that initial inquiry, the supervisor sends the thesis Abstract and an estimation of when the work may be ready for examination. Once potential examiners are locked in, the Grad School then handles the process. There are strict provisions that neither students nor examiners are to make contact with each other, and breaches can derail the whole process.

But just because a student doesn't have direct knowledge of their examiners doesn't mean that they shouldn't be involved in discussions about potential examiners. Selecting the best examiner is in everyone's best interests, and that is why many supervisors actively seek input from their students about examiner preferences.

Getting the Right Examiner

There's plenty of good information that relates to choosing an examiner. Kiley (2009) usefully points to the importance of considering the reputation of the examiner, their knowledge of the topic and 'fit' with the methodology, their capacity to benefit the candidate's career, their examination experience, and knowledge of the type of degree (i.e., professional doctorate, creative practice-led degrees and so on).

Here's a quick round-up of key considerations:

1. Think about how a potential examiner may be helpful for the student's future career. For example, if the student has a strong interest in working in a particular country, research centre or institution, an examiner from such a location could be advantageous.
2. Examiner perspectives may be worth closer attention. For example, consider the benefits and cautions regarding disciplinary expertise versus industry expertise, experience of the genre (e.g., Thesis by Publication) versus disciplinary expertise, novice versus experienced examiners.
3. Identify the strengths of the research and thesis—and play to these in choosing the examiner.
4. Consider the *mix of examiners* that will produce the best coverage of key aspects, such as the field, methodology, industry knowledge and thesis type.
5. Apart from these professional components, consider also examiner personality: 'You don't want a smart Alec' for an examiner! (Kiley, 2009, p. 889—titular).

But what can be done with this information?

A Four-Step Process for Considering Examiners

Here's one process for how a student might take an active role in the process of choosing an examiner.

1. Three to four months out from submission, arrange a special supervision meeting to discuss possible examiners.
2. Prior to the meeting, students should list six to eight possible examiners from most favoured to least—plus any they would not want. Don't neglect the importance of *ruling out unsuitable people* (maybe someone's work is admirable, but they have a reputation for being ruthless, or maybe there's the potential for a conflict of interest). Supervisors should also think about suitable examiners.
3. At the meeting, discuss the advantages and disadvantages of the listed individuals for the particular thesis and research to be examined. Such discussions can illustrate the issues at stake and demonstrate how the process works, giving students valuable insights into the academic world.
4. Then it's time to do some homework in preparation for a follow-up meeting.

- Both student and supervisor(s) should (carefully and appropriately) collect 'insider' information on the shortlisted favourites. The academic world is small and highly networked. For example, it can be helpful to know if a potential examiner is reliable, if they have a reputation for being pedantic, or if they are married to a major competitor of your research institute!
- Ask the student to search their whole thesis recording (rather than guessing) every reference to the potential examiner and their work. This activity creates an empirical account of how often, where, and in what ways, citations have occurred in the document. It's not that every examiner needs to see themselves cited; however, it would be curious to choose an examiner that wasn't part of the community of scholars referenced in the thesis. Secondly, the student needs to check that they have correctly interpreted/critiqued/referenced each of these potential examiners and their work. Ask the student to think about how those who have been referenced will feel when they read what's been said about them and others (possibly their friends and colleagues).
- At the second meeting everyone should have the chance to share their homework and air their views, and hopefully, through discussion, arrive at general agreement on a short list of favourites. In the end, however, it's important to remember that the choice of examiners is the responsibility of the supervisor(s)—and even then, despite their best efforts, a favourite may be unavailable or unsuitable for one reason or another.

Even where institutional guidelines are strict about the examiners' identity remaining confidential, these supervisory practices provide clear benefits. Students are given the chance to critically re-examine their own work from an examiner's perspective and they learn more about the often-occluded practices of the academy. Supervisors get assistance with the difficult task of finding the best match of examiners to suit their student's work.

In spite of the fact that the student will leave these discussions still not knowing who their examiners are, they will have learned by engaging in the process—and no doubt will have contributed to the final decision.

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