

Integrating publications in the social science doctoral thesis by publication

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ABSTRACT

While still more common in the sciences, the Thesis by Publication (TBP) is gaining increasing popularity in the social sciences. However, we argue that norms and possibilities around accepted possible structures for this thesis form are still very much emergent, with a paucity of research concentrating on this area. As a consequence, doctoral students may lack adequate guidance about structural possibilities; there may be over-dependence on imitation of structural features of the traditional thesis, which could potentially compound issues of repetition; and greater clarity may be needed for the purposes of examination and composition of university policy. To respond to this gap in the research, we subjected 153 theses by publication in the social sciences produced between 2014 and 2017 in Australian universities to text-level structural analysis, in order to identify structures used in the contemporary TBP. Our research highlights 11 structural choices for the contemporary TBP observed in the data, also touching on possible motivations for and benefits of the varying approaches. We also highlight areas in need of further discussion and research that arise from the multiple structural possibilities emerging in the data.

TAGS

Thesis by Publication;
publication during
candidature; thesis structure;
social sciences

Introduction

The Thesis by Publication (TBP) is increasingly common in Australian universities. This approach to doctoral education sees candidates publishing their work throughout their candidature and including their research outputs within their final thesis submission. Such doctoral programs, also known by diverse names such as TBP and Thesis by Papers amongst others (Edmonston, 2016), are available at almost all universities in Australia (Jackson, 2013), and the TBP approach is also common in a number of other countries and regions (Gould, 2016). While in the past the TBP has been the domain of Science, Technology, Engineering and Mathematics (STEM) disciplines, a recent review of TBPs conferred in Australian universities shows that it is also gaining traction as a viable option for doctoral candidates in the social sciences (Mason & Merga, 2018).

As the TBP becomes more widely accepted, debates and discussions are taking place within academia which serve to influence the development of new institutional guidelines

and policies, as well as social norms and implicit expectations (e.g., Sharmini & Kumar, 2017). Most of the discussions taking place are between established academics, through their perspectives as supervisors and examiners (Mason, in press). This has meant that the debates generally revolve around issues which directly impact them, particularly those of authorship and contribution to publications, a debate well represented in the academic literature as well as public discussions (Cleary, Jackson, Walter, Watson, & Hunt, 2012; Dinc, 2014; Sharmini, Spronken-Smith, Golding, & Harland, 2015). Less consideration has been given to other aspects such as students' experiences and voices, or the typical structural features of the TBP. This article focuses on this second point.

The structure is a particularly important element of the TBP because university guidelines in Australia place 'considerable emphasis on the thesis comprising more than the sum of a collection of papers and a substantial critical review, which ensures the submission of a cohesive and significant body of work' (Jackson, 2013, p. 360). Students cannot simply submit a bundle of papers from a common research project or series of projects; the logic of the organisation and inclusion of these papers should ideally be visible, and the papers need to tell the research story as seamlessly as possible, which constitutes a significant challenge. For example, the University of Western Australia (2016) requires that 'the papers included in a thesis as a series of papers must be in a logical order and linked together' (p. 1).

A key structural concern arises from the tension between the need to create a cohesive whole and the necessity of compartmentalisation of a study into publishable parts. Concerns have been raised about candidates' ability to take these parts and build them back into a unified and cogent thesis, particularly if candidates lose sight of the research as a single study (Moodie & Hopgood, 2012). Candidates need to consider the role and aims of each paper, as well as where it sits within the entire study, and the differences in expectations between different genres can make reconciling these differences problematic. In addition, the range of permissible publication types for inclusion is ever expanding, though the journal article is still strongly favoured in recent TBPs (Mason & Merga, 2018). Recent candidates in the social sciences have voiced concerns about the challenges of effectively structuring a TBP, and the lack of examples available to them (Mason, 2016, in press; Merga, 2015; Pittock, 2011).

Furthermore, as text types, the thesis and academic journal articles typically follow different structural rules and norms. Academic papers are narrower in scope than a doctoral thesis, and authors of academic papers are often required to be succinct in their reporting, and at the same time, they generally have to assume a certain intellectual knowledge from an informed audience in response to the comparatively limited word count of a paper or conference presentation. This is in contrast to candidates writing a doctoral thesis who are required to go into greater detail to justify their choices in order to demonstrate an in-depth understanding of methodological issues. Therefore, extraneous details may not be appropriate for a journal paper but would otherwise be necessary in a doctoral thesis to illustrate a candidates' understanding. This was the experience of Pittock (2011), whose TBP including nine publications was criticised by one examiner, who reported that 'information about methodology and what the chosen methodology means in terms of pros and cons is much less rigorous' than might be seen in a traditional thesis (p. 21). The University of Wollongong (2017) guidelines ask candidates to consider whether it may be 'appropriate to include additional material to augment the publications' to overcome these gaps (p.3).

The required quantity of papers is rarely stipulated, and while the number of papers that should be included in a TBP is something that concerns candidates, the more critical criterion is the development of a unified body of work. Greater quantity does not necessarily result in a superior thesis; this is illustrated in an anecdote provided by Moodie (n.d.) at Monash University, where a 'PhD thesis which included nine papers was strongly criticised by examiners for not presenting a coherent body of work, while another PhD with only three papers was commented on very favourably by examiners' (p. 1), though clearly numerous other factors are at play. Nonetheless, students still seek a numerical benchmark in postgraduate forums to guide their planning. However, even in the natural and biomedical sciences, where TBP is more common than in the social sciences, 'the transition towards dissertation by publication has taken place without resolving the pertinent question of the actual number of publications' (Hagen, 2010, p. 568).

While there may be gaps in reporting across published papers, there is also likely to be repetition of ideas, something that is best avoided in a doctoral thesis. Journal papers follow a predictable formula including introduction, literature review, methodology, findings, discussion and conclusion. Each paper in a TBP will need this information in order to contextualise and explain the study to each new audience. While university guidelines often appear to generally acknowledge repetition, 'it is expected that the repetition be minimal so as to facilitate the examination process' (University of New England, 2015). However, how repetition can realistically be limited within these constraints has not been substantially addressed in the research literature or typically explored in policies on TBP, and therefore there is a paucity of guidance provided to candidates who are required to establish this balance.

While a traditional thesis is written with one audience in mind, the panel of examiners, in engaging with multiple publications, candidates will be required to adapt their writing for a greater breadth of audience. Each journal has a different scope and style, often as explicitly detailed in the author guidelines, as well as implicitly evident in the tone and voice of accepted papers. This poses a challenge for achieving consistency in terms of style and structure across papers that comprise the thesis, described as an 'inconsistent adoption of voice that was potentially disruptive to the overall coherence of the thesis' (Merga, 2015, p. 302). In addition to style and voice differences, each journal has its own manuscript guidelines, and so reconciling spelling conventions, referencing styles and formatting requirements between papers, and within the thesis itself, adds another level of complexity for candidates endeavouring to unite their papers into a single flowing study (Mason, in press).

Further challenges occur if papers published earlier in the candidature are not consistent with papers published later, as changes and improvements are made to the study (Moodie & Hopgood, 2012). It is common for doctoral candidates to change elements of their study as they develop new knowledge and skills, and as they engage with the existing literature and their own empirical data. In a TBP approach, it is possible that these changes become 'frozen' in time (Moodie & Hopgood, 2012, p. 887). For example, in Merga's (2014) first accepted paper in her TBP, she used the term avid reader in a manner that suggested that reading frequency and attitudes are always related, a position that she would contest in her later papers, as she learned more from the data which ultimately contradicted this idea. The challenge for candidates is to consider 'ways which enhance, rather than diminish, the coherence of the thesis and its eventual, overall

outcomes' (Robins & Kanowski, 2008, p. 16), and to acknowledge and address these perhaps inevitable inconsistencies in an explicit and thoughtful manner.

In light of these challenges, the aim of this study is to identify the ways in which recent successful doctoral candidates in the social sciences have structured their TBP to include publications in order to construct a single and coherent monograph. The authors were interested in the answers to two broad questions which guide the study:

- (1) What structures are used in the TBPs and where are papers included?
- (2) What strategies are used to promote cohesion and consistency between papers and across the thesis as a whole?

The findings have the potential to make a significant contribution to the field in three ways. Firstly, analysing doctoral theses can help 'budding researchers understand the culture, language, and expectations of scholarship', and in this case the authors aim to provide examples and guidance to doctoral candidates in how to structure a thesis including papers (Randolph et al., 2012, p. 81). Secondly, because the five-chapter model of the traditional doctoral thesis is a well-established academic convention, particularly in the social sciences, the ability of readers and examiners to engage effectively with the new TBP paradigm requires an understanding of its structures and features. This study illuminates these features. Finally, our findings have the potential to highlight deficiencies in guidelines and policies, providing recommendations for how institutions can better support their doctoral candidates in the development of their TBP, both in practice and policy, as well as improve the fairness and transparency of the examination process.

Methodology

This study uses a text-level structural analysis as the best approach to analyse the structural features of the TBP. Text-level structural analysis has been used to identify the typical structures of different written text genres, including graduate thesis discussion sections (Nodoushan & Khakbaz, 2011), research paper abstracts (Liddy, 1991), and newspaper articles across different languages (Kando, 1996). While structural analysis often aims to assist in the development of automated indexing and retrieval systems, the same principles apply in non-digital contexts, because it aims to support users' use and understanding of a document using its text-level structure (Kando, 1999).

The first step in the analysis was to identify the parameters for the corpus of TBPs to be included. We began with a corpus of 636 TBPs amassed from a recent study by the authors of the prevalence of TBPs across different research disciplines (Mason & Merga, 2018). These TBPs were conferred between 2014 and 2017 by Australian universities, as identified through searches of full-text online thesis repositories. From this original corpus, we identified TBPs from social science fields, as defined by the Academy of the Social Sciences in Australia (2016). Through this manual review process, we initially identified 160 TBPs for inclusion in this study that met our chronological and disciplinary requirements.

Bibliographic data on each of the TBPs were input into an Excel spreadsheet, including the research field, year of submission and hosting university. The full text of each of the TBPs was then imported into MAXQDA12 qualitative data software, which was used to

assist in the data coding. For each thesis, the table of contents – and where necessary the body of the thesis – was reviewed and structural elements and publications were coded. A review of the table of contents and the introduction chapter was also conducted to identify any references to the TBP by the candidate, such as explanations of the thesis structure, diagrams illustrating the thesis structure and any discussions of structural issues. The codes were finally exported back into the original Excel spreadsheet to calculate totals and percentages and to identify models of thesis structure.

Results and discussion

After collecting initial descriptive data from the 160 TBPs, a decision was made to remove seven from the corpus, those which included publications solely within the appendix. In these TBPs, the removal of the relevant appendices would still result in a complete thesis that would potentially meet all of the requirements for successful conferral. While including publications within an appendix is an option available to candidates at some universities in certain fields, this structure did not fit the aims of our study because we were concerned with issues arising from integrating publications into the thesis, as is the recommended approach in many universities. Thus, the final analysis included 153 TBPs, which came from 22 Australian universities (Table 1) and eight broad research fields (Table 2).

These tables suggest that there are marked differences in the concentration of TBPs in the social sciences at Australian institutions, and within social science research fields.

What structures are used in the TBP and where are papers included?

While the range of publication types that can contribute to a TBP is broad and increasingly inclusive, as aforementioned, a recent review of TBPs in social sciences found that academic journal articles and conference proceedings remain the most common publications included in recent TBPs (Mason & Merga, 2018). For ease of reading, the term ‘paper’ will be used when discussing all research outputs included within a thesis. In this sample, TBPs included between one and 12 papers, with an average of 4.5 papers. The example structural models presented in this discussion will use the average of four papers in most cases, or more in models which facilitate the publication of a wider range of paper types.

Table 1. Host institutions of TBPs ($n = 153$).

University	<i>n</i>	University	<i>n</i>
Macquarie University	67	Australian Catholic University	1
University of Newcastle	18	Curtin University	1
Queensland University of Technology	15	Edith Cowan University	1
La Trobe University	6	Griffith University	1
Deakin University	3	University of Canberra	1
Murdoch University	3	University of Melbourne	1
University of Adelaide	3	University of New England	1
University of Sydney	3	University of Notre Dame	1
University of Western Australia	3	University of Queensland	1
Australian National University	2	University of Wollongong	1
Royal Melbourne Institute of Technology	2	Victoria University	1

Table 2. Broad social science research fields of TBPs ($n = 153$).

Broad social science research field	<i>n</i>
Psychology, cognitive psychology, cognitive science	70
Business, economics, accounting, management	32
Education	18
Design, urban design, architecture	16
Political science, law	7
Linguistics, language	4
Anthropology, sociology	4
Geography	2

Consistent across the majority of the TBPs was the inclusion of an introductory chapter to begin the thesis (99%) and a conclusion chapter to end the thesis (97%). This is a reflection of university guidelines, which often explicitly require a TBP to be more than a collection of papers, though not all universities deem these features essential in the TBP. For example, while the University of Melbourne (n.d.) does not specify these features as essential, across the five structural examples they provide, all have an introduction, though only one has a conclusion. The introduction and conclusion chapters generally follow traditional norms, making it easier for readers without experience with the TBP model to navigate. Drawing on these recognised structural conventions may be important, as there can be some misconceptions and reticence to accept the validity of the TBP approach, which may adversely impact the examination process.

Introduction and conclusion chapters are similar in style and content to a traditional thesis. An introduction chapter generally introduces the research problem, states the study aims and provides an overview of the thesis. It does, however, deviate from the traditional model in its typical inclusion of bibliographic details of each included paper, and often a summary of each of the papers. There may also be sections dedicated to a review of the relevant literature and/or a discussion of the research design and methodology, although this is much less substantial than that seen in a traditional thesis, because these aspects are typically also addressed within the papers. This is explained by Hartnett (2016), 'where applicable this overview also includes a select amount of additional material omitted from or firmly paraphrased within papers due to editorial restrictions of journal publishers' (p. 1). The inclusion of brief literature review and/or methodology sections within the introduction, rather than in separate chapters, may be explained directly to the reader, in order to circumvent any concerns by examiners. For example, 'this thesis-by-publication does not contain a section designated as the "literature review", as the relevant literature is reviewed within each journal paper and so a separate chapter would be redundant' (Lingard, 2015, p. 11). At the end of a thesis, conclusion chapters provide a discussion of the findings of the study as a whole. While they may detail the contribution of each individual paper, they also bring them together in a consolidated discussion.

The most common TBP structure seen in this sample uses an introduction chapter and a conclusion chapter to encase papers which are positioned within the centre of the thesis. Applied to more than half of the TBPs in the sample ($n = 83$), we have called these 'Sandwich Models'. There are three different ways in which the Sandwich Models are organised. The first and most common of these ($n = 79$), Sandwich Model A, positions each paper in its own chapter (Figure 1). The structure of each chapter as described by Chang (2015): 'as

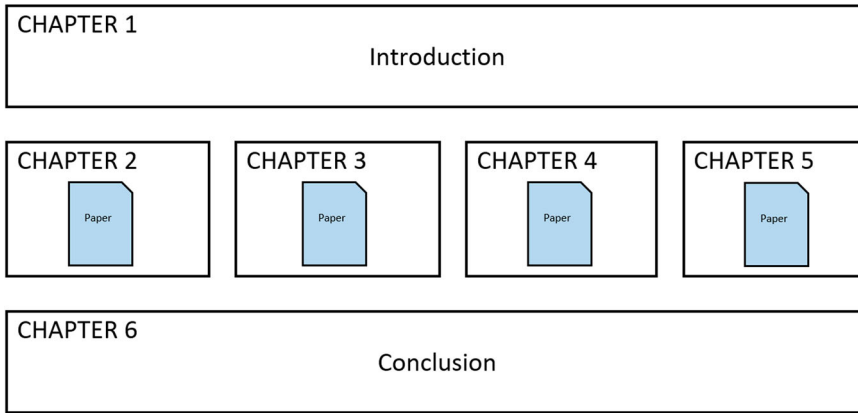


Figure 1. TBP Sandwich Model A ($n = 81$).

opposed to a traditional thesis, each chapter (paper) contains a relevant literature review, detailed methodology, results, discussion and a conclusion section' (p. 9).

Less commonly ($n = 3$), as in Sandwich Model B, publications are included exclusively within a single internal chapter (Figure 2). Prefacing his TBP using this model, Strahorn (2016) wrote 'in remaining in line with the publication approach of this thesis, the results of this research have been presented via a series of individual, yet interconnected, published conference papers and journal articles. This chapter includes the individual publications' (p. 119).

One further model, Sandwich Model C, divides all of its included papers into a number of internal chapters (Figure 3).

A considerable number of TBPs in the sample build on from one of the three Sandwich Models. In 52 cases, Sandwich Model A is adopted as a base, with a separate literature review chapter ($n = 19$), a separate research methodology chapter ($n = 11$), or both ($n = 21$) added. As shown in Figure 4, this Mega Sandwich Model A resembles closely the traditional five-chapter thesis. The purpose of these chapters is likely to fill in gaps in

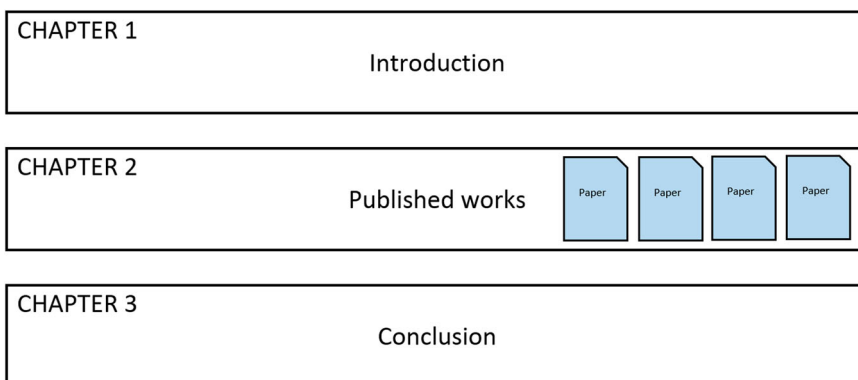


Figure 2. TBP Sandwich Model B ($n = 3$).

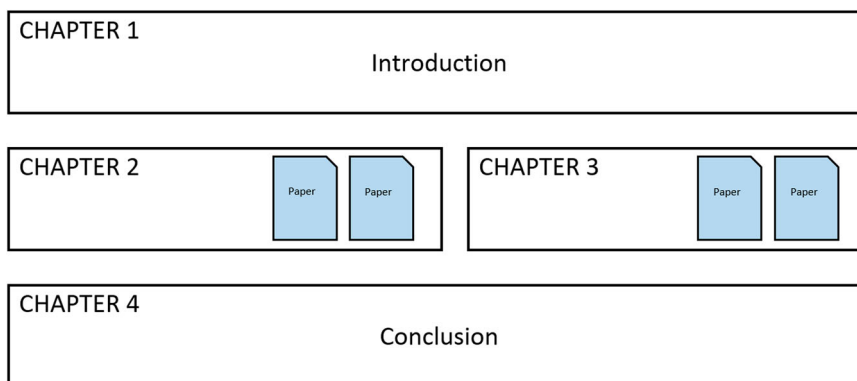


Figure 3. TBP Sandwich Model C ($n = 1$).

reporting due to the nature of academic papers, as discussed earlier. Institutional guidelines may also be a contributing factor. For example, at the Queensland University of Technology (n.d.), 'a doctoral Thesis by Publication must include all of the standard thesis components ... including an introduction, literature review, conceptual framework, methodology, results, discussion and conclusion' (para. 4).

Six TBP's similarly build on Sandwich Model B (Figure 5), adding an extra literature review chapter in one case, an extra research methodology chapter in another, and both literature and methodology chapters in the remaining four cases.

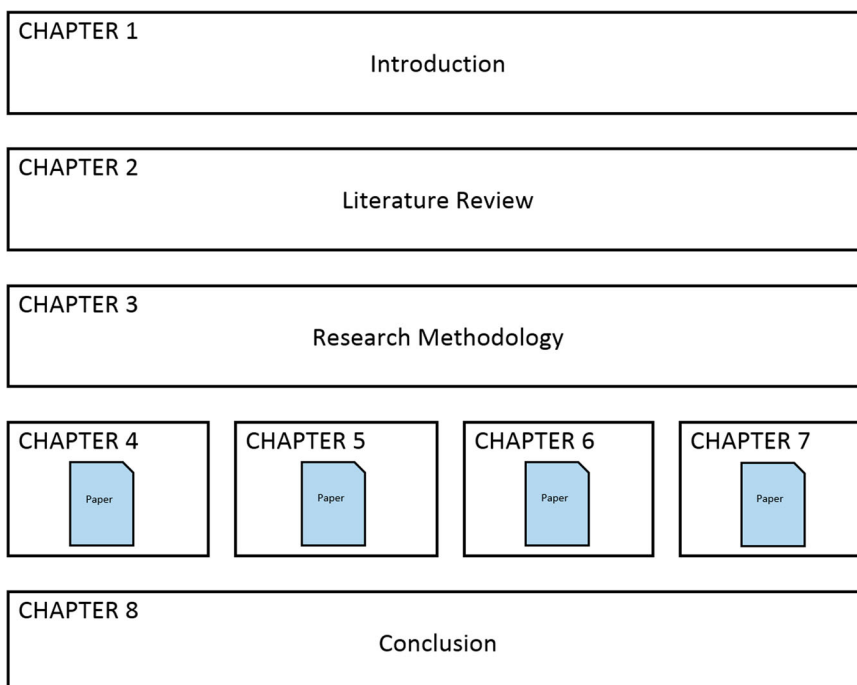


Figure 4. TBP Mega Sandwich Model A ($n = 52$).

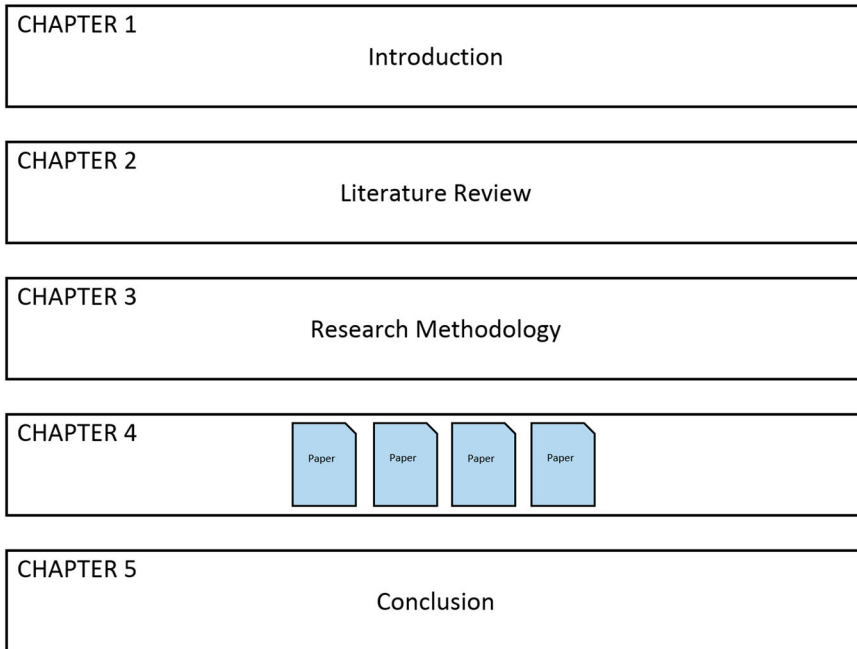


Figure 5. TBP Mega Sandwich Model B ($n=6$).

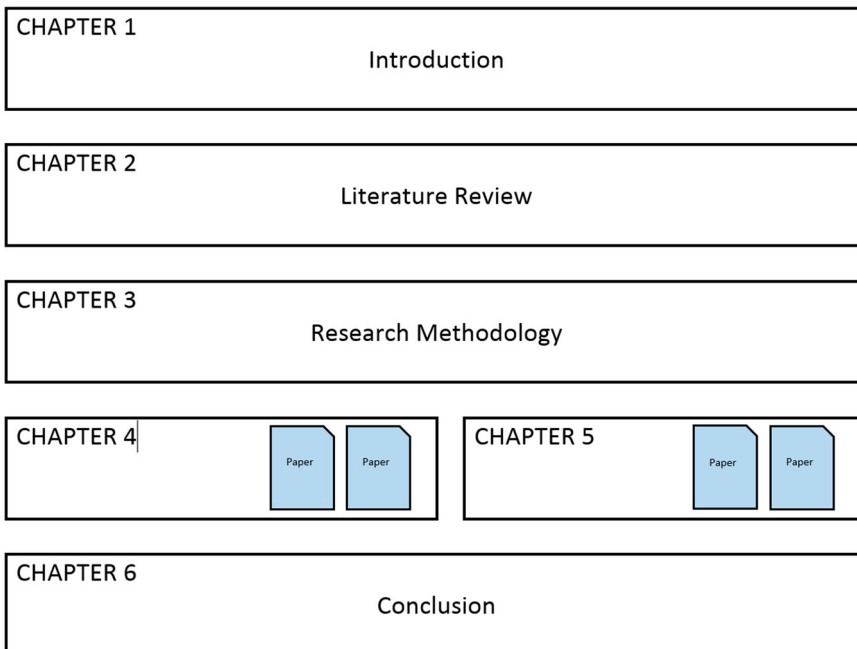


Figure 6. TBP Mega Sandwich Model C ($n=3$).

The next model is based on Sandwich Model C, in two cases adding an additional methodology chapter, and one case adding both a methodology chapter and a literature review chapter. While the model in Figure 6 (and similarly in Figure 3) shows four papers divided evenly into two chapters, there was variety in the number of chapters and the number of papers included in each, structured according to particular phases or themes of the research, or in response to different research questions. The two model C structures, then, are likely suited to those research projects that are designed with distinct phases or foci. In order to explain the division of papers in her thesis using this model, Lingard (2015) prefaces each chapter with a section entitled, 'What this chapter does'.

Within the TBPs adopting the first six models, 11 also included an additional paper within the 'traditional' chapters, presenting as a slight variation we call the Sandwich with Sides Model (Figure 7). Most commonly an additional paper was included in the introduction chapter ($n = 4$) or in the literature review chapter ($n = 4$). It was less common to see a paper included in the conclusion chapter ($n = 2$), or the methodology chapter ($n = 1$). While literature review and methodology elements of a doctoral study are areas where candidates may be able to build on their publication record, their minimal number suggests that it may be comparatively difficult for candidates to publish these types of papers, which may have a lower acceptance rate than those reporting original empirical studies which produce positive results (e.g., Matosin, Frank, Engel, Lum, & Newell, 2014). However, this may indicate an area in need of further attention in doctoral education, as more training in the construction of less 'publishable' papers could lead to more opportunities for the doctoral candidate to publish their work, and thus give them more scope to develop a thesis which is less dependent on traditional academic norms.

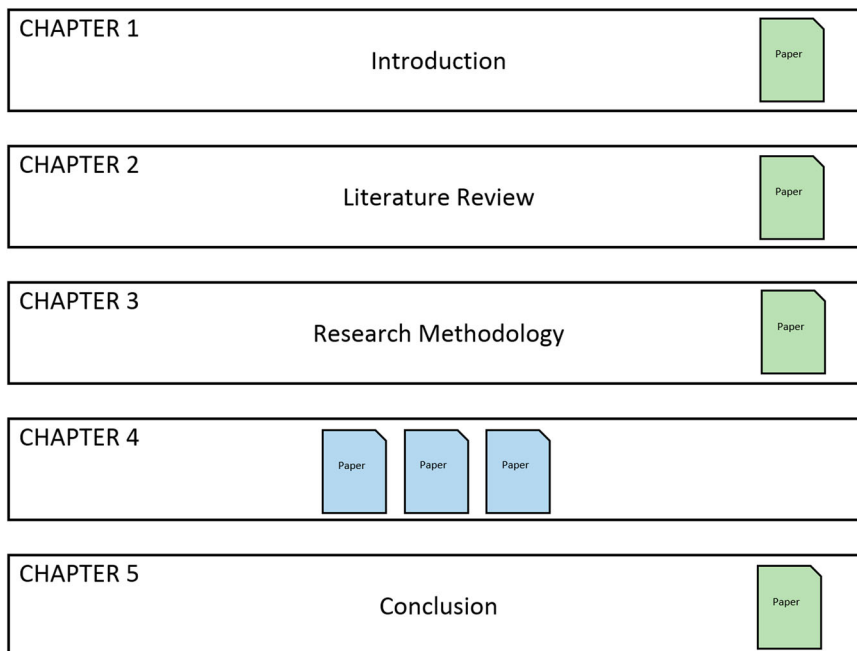


Figure 7. TBP Sandwich with Sides Model ($n = 11$).

While the majority of the TBPs in this sample typically adhered to the models presented thus far ($n = 147, 96\%$), there were also other structures which deviated further from traditional norms. The Two-Part TBP Model, seen in three TBPs and shown in [Figure 8](#), divides the thesis into two distinct sections. The first part of the thesis includes an introduction, brief literature review and research design, as well as elements that might traditionally be included in a conclusion chapter, such as conclusions and recommendations for future research. This first section sets up the reader with all the elements needed to understand the papers and their contribution to the research field, leaving them finally at the end to read the papers themselves. Unlike the inclusion of papers within an appendix, which provides supplementary material, these papers are vital to the integrity of the thesis. Such TBPs may be suitable when it is difficult to integrate individual papers into the narrative of the thesis, while still conforming to the expectations of the TBP format.

Another alternative saw the internal chapters of the TBP divided into a conceptual phase and an empirical phase, each with its own introduction, methodology and presentation of findings ([Figure 9](#)). In this case, the conceptual phase was described as a literature review, but extending on a literature review in the traditional sense because the papers present a series of methodologically informed analytical studies that produce their own findings, and make a contribution to the knowledge body in their own right (Mason, 2016). As literature reviews can be produced earlier in the candidature than empirical findings, this is an area where candidates may find an opportunity to build their experience in writing academic publications and build the number of publications. Pickering and Byrne (2014) provide a useful discussion of how doctoral students can construct 'a quantitative overview of a field of research that journal editors and reviewers have found valuable and worthy of publication' (p. 547).

Sanders (2015) developed a model which includes three distinct internal chapters: Theory, Method and Application ([Figure 10](#)). Each chapter is dedicated respectively to reviewing the literature, discussing the research methodology, and reporting and discussing the findings. The internal chapters are a mix of narrative and paper/s which are interspersed at relevant positions within the chapter. The inclusion of narrative alongside

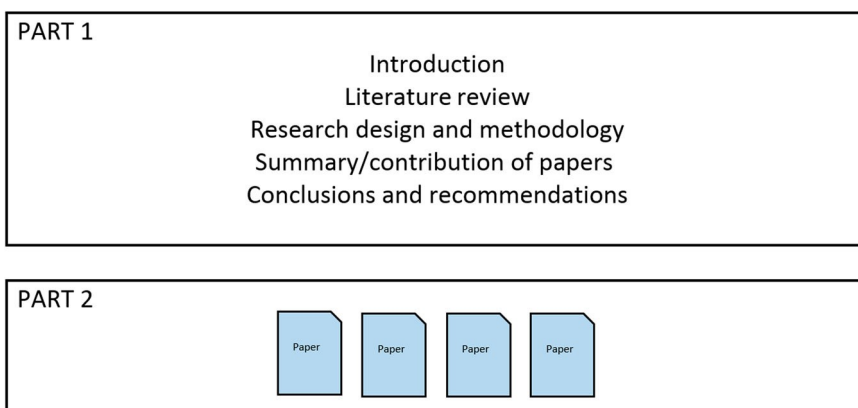


Figure 8: TBP 2-part model ($n = 3$).

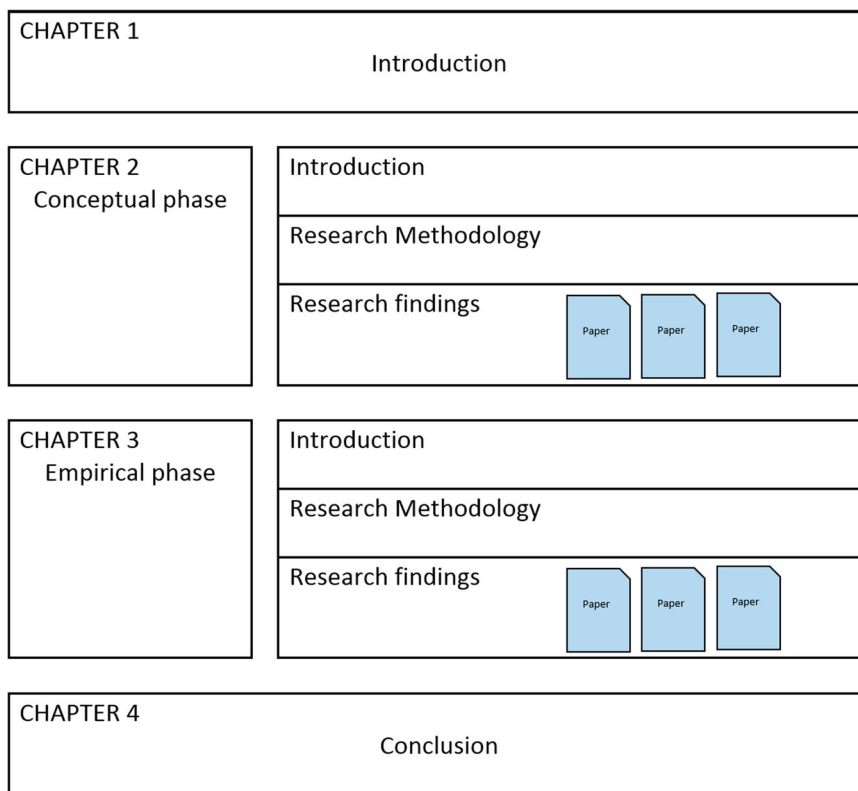


Figure 9. TBP conceptual and empirical model ($n = 1$).

papers gives the candidate the opportunity to guide the reader in the navigation of the thesis, and to address any limitations of the papers.

The final model presented is a step away from the others, because it does not include the papers as they were published (or with minor amendments), but uses multiple papers as the building blocks on which to base the chapters (Figure 11). Choudhury (2015) adopted this model and explained in the preamble to relevant chapters that ‘some content of this chapter evolved from the following publications by the author’, before listing multiple publications (p. 1). This model may have been strategically employed to avoid the potentially considerable repetition that may have occurred as a result of publishing multiple (in this case 12) papers, and so this approach may be suited to TBPs with multiple publications, and/or where it is difficult to weave publications in their original form into a single, cohesive narrative.

What strategies are used to promote cohesion and consistency between papers and across the thesis as a whole?

The structure of each TBP and the position of papers are typically designed in a way to promote cohesion and consistency, responsive to the key criterion for a doctoral thesis, particularly one that includes publications. There is little explicit discussion or explanation of the ordering of papers within the TBPs, although it is apparent that papers are not

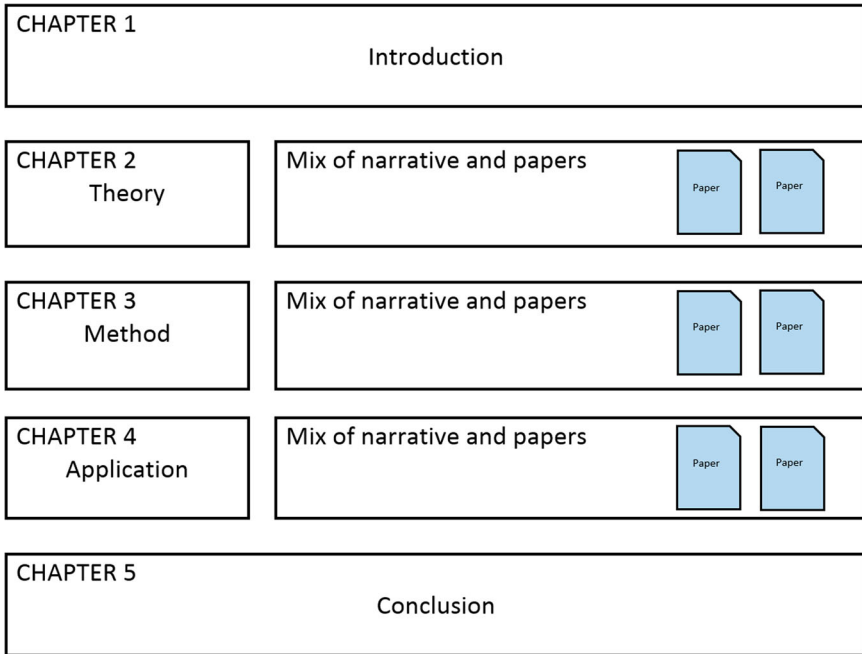


Figure 10. TBP theory, method, application.

necessarily presented in the order in which they were written or published. One candidate notes that the order of papers ‘reflects the interrelationship between the three studies to achieve the primary aim of the research project’ (Fitts, 2015, p. 106). The rationale for

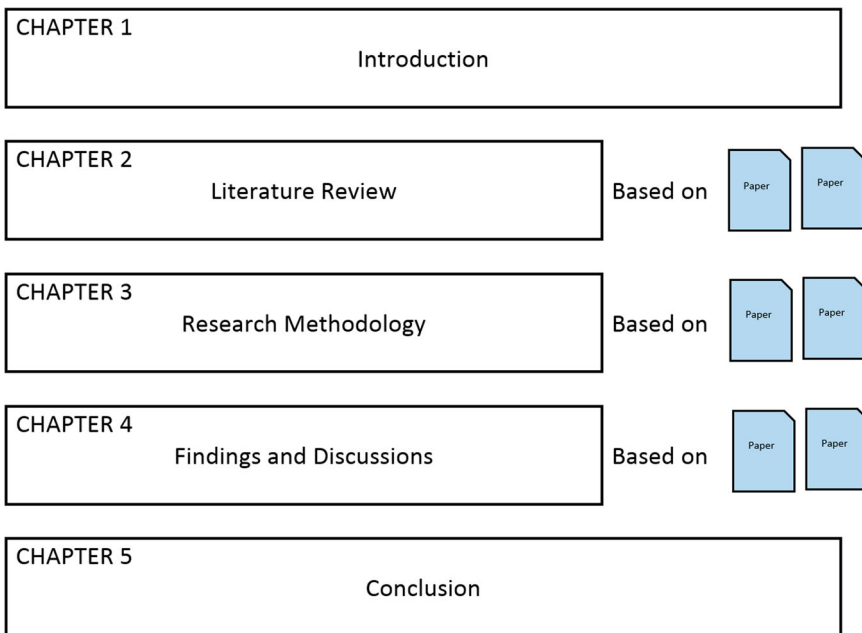


Figure 11. TBP paper-based chapters model ($n = 1$).

the ordering of papers within each TBP was infrequently made explicit, highlighting a need for further research to explore the logic employed in this key structural decision.

Alongside the structure of the thesis itself, a number of additional strategies were identified within the TBPs that helped to facilitate the flow of the thesis. The most common of these strategies is the use of narrative to assist the reader in their navigation of the thesis. While this is something that is seen in a traditional thesis, there is often a more direct interaction with the reader observed in our sample of TBPs. Such a narrative is used to introduce the thesis structure, to explain the role and significance of each paper, and to explain inconsistencies and other threats to the cohesion of the thesis. In many cases, this narrative is seen in the introduction chapter, but may also be included as a preface to each paper, alongside details about publication status and authorship.

When highlighting unavoidable issues with the TBP model, the main issues that are explicitly raised within the narratives presented are that of repetition of ideas, and the lack of consistency across the papers in terms of style and formatting. Readers are often given a pre-emptive warning about issues that cannot be easily changed, such as the different style of language used, which are sometimes noted as 'unavoidable' or 'necessary'. An example is as follows:

It also should be noted that while a more orthodox thesis might be characterised by consistency in writing styles between chapters, this thesis features a degree of 'genre jumping' where those chapters that have already been published have been written according to the specifications of each of the scholarly journals in which they appeared (eg. word limit, audience, aims of the journal). The other chapters have not been subject to such constraints and the differences in tone and length and some minor changes in formatting may seem discordant for some readers. This I believe is unavoidable and should not diminish the quality of the overall thesis. (Ditchburn, 2014, p. 13)

As such, Ditchburn (2014) advocates for consideration of the unavoidable nature of tonal changes within the body of the thesis, adopting a protective stance.

Constructing a single and consistent thesis often requires consideration of formatting issues. There is generally an expectation that the content of papers be included in the TBP formatted as they were published (or with slight amendments), although Figure 11 presented an exception to this, and some university policies may require the adoption of a common format. For example, Edith Cowan University (2017) requires that 'the publications should be formatted the same and embedded as chapters within the thesis' (p. 2). In terms of the insertion of papers within the TBP, where not constrained by institutional requirements, candidates basically have two options. They can insert papers exactly as they were published, or they can reformat the paper to match the style of the rest of the thesis. Many candidates take a pragmatic approach, keeping some elements of the papers but adapting others. For example, a candidate may choose to adapt the font style, line spacing and heading styles to match the rest of the thesis, but keep the referencing and spelling conventions of each paper. Elements such as abstracts, key words and author biographies are often removed. Some TBPs include a header or footer with the paper number and title, or used a page border, to clearly delineate papers from the rest of the thesis.

There are some formatting elements that will likely not correspond between papers and the thesis itself. This includes numbering of pages, headings, tables and figures. When including papers exactly as they were published, the result is that 'figure and table numbering within each chapter is contained and consistent with the original published version,

and is therefore not consecutively linked throughout the thesis' (Sanders, 2015, p. 14). Another option is to remove page numbers from the papers, or to number thesis pages consecutively, making an accurate citation of the paper problematic for readers. In some instances, candidates who heavily reformatted their papers to blend in with the thesis also include the published versions in the appendix. This may be to allow readers to view the original version with original page numbering to allow for accurate citation, and to provide concrete and immediate evidence of publication status of the work.

To reconcile references in papers with the rest of the thesis, there were several approaches noted in the sample. One is to include contained reference lists at the end of each chapter. A second approach is to include all references only once in a single reference list at the end of the document. A third approach is explained by Baker (2016), where 'references to the individual published articles are included in the body of the article and therefore the reference list at the end of this thesis contains only those references that relate to the non-published sections of the thesis' (p. 23). A final option is to leave references attached to each paper as it was published, but also include them at the end of the thesis with all references from the thesis, in a consolidated reference list.

While reformatting of papers in a TBP is often accepted in policy and practice, rules about the editing of the content of the papers themselves are less evident. For example, Mason (2016) added an extra paragraph to one paper, and an extra table of information to another, with a note explicitly stating that the information 'has been added to the original publication' (pp. 30, 210). However, Locke (2014) reported that 'as this is a published paper, improvements cannot be added to the paper itself' (p. 71), and instead listed improvements at the end of the paper. As discussed earlier, there are a number of reasons why a published paper may require additions or amendments. In order to improve the quality of the thesis and to present the doctoral study in the best possible way, it is important that candidates are given an opportunity to address issues that may be frozen in the papers. The lack of clarity regarding the editing of papers that have already been published illustrates a need for further discussion in this area.

Conclusion

Our research highlights a wealth of structural possibilities for the contemporary TBP in the social sciences and potentially beyond, also touching on possible motivations for and benefits of the varying approaches. We strongly urge that these structures not be viewed as definitive models, rather as emergent possibilities which can be used if suitable, with additional possibilities likely to emerge in the future. At this stage, we do not know which of the structures favoured within our sample are most well received by examiners, and this emerges as a pertinent area to build on the foundation of this research. We hope to use our foundational research here to inform subsequent longitudinal research to identify common patterns emerging over time, to identify what kinds of research projects and methodological approaches best match different structures.

Additionally, we highlight strategies used to promote cohesion and consistency between papers and across the thesis as a whole. These related to ordering of papers, use of a unifying and signposting narrative voice, acknowledging and addressing unavoidable weaknesses stemming from the TBP approach (such as repetition), adoption of a consistent formatting approach, and scope and licence for editorial adjustments to published

works. As there is limited research into how to best manage these strategies, we advocate for greater research in these areas. Fostering a deeper understanding of how to best structure the TBP and use strategies to help readers and examiners effectively negotiate this thesis mode can improve students' experiences and institutional policies, and improve the quality and fairness of the examination process for TBPs. This will primarily be achieved by providing clarity around areas of ambiguity without requiring a one size fits all approach where multiple options can best meet the needs of varying contexts and individuals.

It is interesting to note the large extent to which TBP structures are conforming to traditional norms for the most part. We wonder if this adherence best serves the candidate and the telling of the story of their research, or if other factors are influencing the final structure of their thesis. The TBP is still in a nascent phase, and as such, there is still scepticism in some circles about the validity of the approach. A lack of deviation from the traditional may be due to a fear of resistance from unsympathetic examiners. It may also be due to a lack of examples, and institutional policies (or lack thereof) which may constrain structural decisions. Where they are not constrained by institutional policies or traditional standards, there is great potential for students to choose a structure that best tells the story of their research, and our efforts to make visible these structural possibilities can greatly benefit students who are looking to adopt a structure that best fits their preferences and needs.

Declaration

The data sample included TBPs completed by the two authors of this article.

Disclosure statement

No potential conflict of interest was reported by the authors.

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