Everything you wanted to know about
Thesis & Dissertations
but were afraid to ask!

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Part I
• Writing a Thesis/Dissertation
  – Definition
  – Getting started
  – Contents

• Later - Part II
  – The Examiner’s/Committee’s View

What is a Thesis?
• An argument to support a hypothesis
• An original piece of research
• The product of an apprenticeship
• One of the largest piece of works you’ll ever do (most likely)
• Something that could be published
  – At least one paper in a journal/conference
  – Not typically the whole thing
**Definition**

*A thesis for the Ph.D. (dissertation) must for a distinctive contribution to the knowledge of the subject and afford evidence of originality shown by the discovery of new facts and/or by the exercise of independent critical power.*

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**Getting Started**

- Start today! Tomorrow is too late!
  - Decide your title
  - Write your title page
  - Start your document
  - Look at other theses in your area
  - Plan your argument
- You can always change things later
  - But you can’t change anything unless you have something to change

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**Plan Your Argument**

<table>
<thead>
<tr>
<th>A Sentence on</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>The success of a software development project depends on capturing stakeholders’ needs in a specification…</td>
</tr>
<tr>
<td>Problem</td>
<td>However, specification often reflect the analyst’s own bias, rather than the inputs of many different stakeholders…</td>
</tr>
<tr>
<td>What’s in the literature</td>
<td>Current methods described in the literature fail to address identification and integration of multiple views</td>
</tr>
<tr>
<td>Method</td>
<td>By treating the specification activity as a dialogue between stakeholders, we can model each perspective separately</td>
</tr>
<tr>
<td>Solution</td>
<td>We provide a set of tools for exploring disagreement between perspectives, and use these tools as the basis for a computer supported negotiation process</td>
</tr>
<tr>
<td>Results</td>
<td>This approach is shown to significantly improve traceability and validity of specifications and overall stakeholder satisfaction</td>
</tr>
</tbody>
</table>
Another Example

<table>
<thead>
<tr>
<th>A Sentence on</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
<td>A PhD is examined by submission of a thesis</td>
</tr>
<tr>
<td><strong>Problem</strong></td>
<td>Many students fail to complete their thesis within four years</td>
</tr>
<tr>
<td><strong>What in the literature</strong></td>
<td>Empirical studies indicate that late submission is highly correlated</td>
</tr>
<tr>
<td></td>
<td>with delaying the start of the write-up</td>
</tr>
<tr>
<td><strong>Method</strong></td>
<td>A model of PhD study that encourages an early start to the thesis</td>
</tr>
<tr>
<td></td>
<td>writing task is clearly desirable</td>
</tr>
<tr>
<td><strong>Solution</strong></td>
<td>Such a model encourages the student to plan a structure for the</td>
</tr>
<tr>
<td></td>
<td>thesis and collect material for each chapter throughout their study</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td>Application of this model dramatically improves submission rates</td>
</tr>
</tbody>
</table>

Plan Your Thesis

- Convert the argument into a chapter outline
  - At least one chapter per sentence
  - Maybe more than one sentence for some
- Start a binder or folder with a division for each chapter
  - Collect material in this binder
  - Set out clearly what each chapter should say
- Don’t be afraid to change your mind
  - As you write the thesis, your ideas will evolve
  - Don’t wait for them to stop evolving – it’s much easier to change an outline that you’ve written down than one you haven’t

Contents

- **Title** – conveys a message
- **Abstract** – for the librarian and announcement
- **Contents listing** – shows that everything is there
- **Acknowledgements**
- **Introduction** – “I am doing the following”
- **Review of Previous work** – show you know the subject
- **Philosophy of the approach** – show you can pick out an important problem
- **Plan of Attack** – show you approached the problem in a systematic manner
- **Description of the work** – details, so that others can follow what you did
- **Critical analysis of the results** – show you understand the limitations
- **Future work** – show you know what’s missing
- **Conclusions** – repetition of the intro, but with reference to detail
- **References** – cover the field; examiners will look for key dereferences
- **Appendices** – the gruesome details that would clutter the description
Say Everything 3 times

- In the thesis as a whole:
  - What the thesis will say (introduction)
  - Details of the work (body)
  - What the thesis said (conclusion)
- Within each chapter:
  - What the chapter says (signposting)
  - The details (body)
  - What the chapter said (summary)
- Within each paragraph:
  - Each paragraph describes a single idea
  - The first sentence introduces the idea (linking it with the previous paragraph)
  - The last sentence concludes the idea (linking it with the next paragraph)

Bibliography

- Keep a database of complete references
  - Use a consistent citation style
  - Use a tool (Endnote, Bibtex, etc.)
  - Attention to detail is important (correct spellings!)
  - Keep complete references (page numbers, volume, location and dates for proceedings, etc.)
- Find out what the local rules are for citation style
  - If there are no rules use [Author Year] or [Author1, Author2, Author3, Year] so your name shows up!
  - Assume the reader is familiar with the main references (but don’t skip any)

Finishing

- Question: How do I get finished?
- Answer: By not getting stuck
- Question: Why are you stuck?
- Answer: Because you’ve set yourself too hard a task.
- Don’t be afraid to change your plan if it proves too difficult
- Cut irrelevant details
Reviewing

• Get other people to read your drafts
  – Peers will give friendly comments and typically have time on their hands
  – Advisor will steer you
  – Other academics will spot things your advisor missed
• Above all:
  – Get the bugs out before the committee sees it

In Summary

• Start writing today (never tomorrow)
• Make up a title page for inspiration
• Write down your argument succinctly
• Turn the argument into a chapter plan
• Maintain a file of stuff to put all the material into
• Don’t be afraid to change the plan

Part II

• The Examiner’s/Committee’s View
  – Reading it
  – What’s this one about
  – Questions

• Previously in Part I
  – Definitions, Getting started, Organization
Examination Issues

• Committee needs to appreciate your research
  – Choose committee well – people knowledgeable about the topic
  – Target your thesis at them
  – Keep abreast of their work
  – Talk to them regularly, ask them what is the norm for your University
• Committee needs to be told about your research:
  – If it’s not in your thesis they won’t find out about it
  – No matter how good your research is, you MUST write a good thesis

The Committee’s View

• Not another thesis to read!
• Your committee members are busy people
• Examining a thesis is a chore, but:
  – It might help me keep up to date in an area of research
  – It might give me new ideas
  – I may learn something
  – I might gain a new colleague
• Note: the reading will be done on trains, planes, and departmental meetings.

Committee Member’s first Question

• What’s this one about?
• Examiners have little time so they want to extract the most in the shortest period of time
  
  Abstract ⇒ Bibliography ⇒ Conclusions ⇒ Contents listing
  
• This may be enough to decide if it’s worth a Ph.D.
• Then:
  1. What questions now come to mind?
  2. Read more carefully
  3. Were the questions answered?
Has it Been Published?

• Peer-review publications are crucial
  – The research community’s most important validation criteria
• Sure-fire recipe for success
  – Identify the top peer-reviewed conferences and journals in your research area
  – Publish your research in them
  – Always take the reviewers comments seriously
• If you’ve published in the right places
  – You have nothing more to worry about
  – Your committee cannot ignore the outcome of the peer-review process

Corrections/Changes

• Now there must be some corrections
  – Some committee member don’t feel they’ve done the job unless they find some corrections for you
• Typical corrections
  – Typographical and grammatical errors
  – Poor presentation
  – Missing references or corrections
  – Missing statements
  – Redundant statements
  – Whole sections missing: Research Question; Critical Review of literature; Research methodology; conclusions; etc.

Defense

• What can I ask the candidate?
  – They may have decided before the exam whether to pass you
• Defense/Exam – lively discussion
• The exam is to check it’s your work
  – Talk fluently about the work
• And a chance to clarify issues that are not clear in the thesis
What the Committee is looking for

- Review of literature
- Methodology
- Presentation of results
- Discussion and conclusions

Review of Literature

- To what extent is the review relevant to the research study?
- Has the candidate slipped into “Here is all I know about x”?
- Is there evidence of critical appraisal of other work, or is the review just descriptive?
- How well has the candidate mastered the technical or theoretical literature?
- Does the candidate make the links between the review and his or her methodology explicit?
- Is there a summary of the essential features of other work as it relates to this study?

Presentation of Results

- Have the hypotheses in fact been tested?
- Do the solutions obtained relate to the questions posed?
- Is the level and form of analysis appropriate for the data?
- Could the presentation of the results been made clearer?
- Are patterns and trends in the results accurately identified and summarized?
- Does the software appear to work satisfactorily?
Methodology

• What precautions were taken against likely sources of bias?
• What are the limitations in the methodology? Is the candidate aware of them?
• Is the methodology for data collection appropriate?
• Are the techniques used for analysis appropriate?
• In the circumstances, has the best methodology been chosen?
• Has the candidate given an adequate justification to the methodology?

Discussion and Conclusions

• Is the candidate aware of possible limits to confidence/reliability/validity of the work?
• Have the main points to emerge from the results been picked up for discussion?
• Are there links made to the literature?
• Is there evidence of attempts at theory building or re-conceptualization of problems?
• Are there speculations? Are they well grounded in the results?

In Summary

• Know your audience
• Help them understand
  – Keep it short
  – Use signposts
  – Get the contents right
• Make sure you’ve covered the bases