RYERSON UNIVERSITY

Demystifying Your Thesis

Instructions on how to report "it"

Department of Computer Science

Graduate Programs in Computer Science

It starts with a Thesis Statement
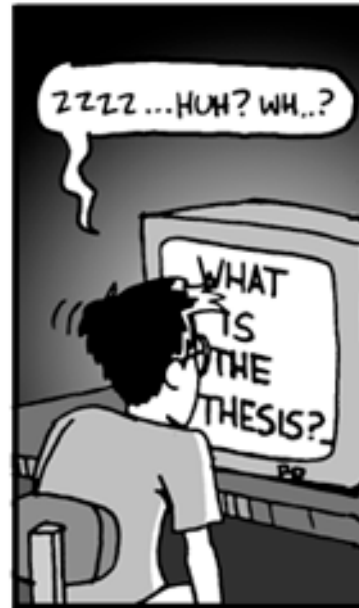
What is a Thesis Statement?

- a statement made as a premise to be maintained or proved.
  - declares what you believe.
  - It is what you intend to prove/show compelling evidence in support of.
- The thesis is written with two goals in mind;
  1. Thorough exploration is possible, and
  2. It can be defended.

All your work happens and…

You Write a Thesis Document

- A thesis document
  - Is a cogent description of
    - Your thesis statement and research contributions
    - What the literature says about your thesis topic
    - Describes your artifacts
    - How you measured them
    - Summary and future work

- The document is a tool
  - Used by you to defend your thesis statement
  - Used by your examination committee to attack your thesis
  - Used by humanity as a record of new knowledge

Thesis Documents have Rules

- These can be found at
  - http://www.ryerson.ca/graduate/policies/documents/SGS_Thesis_Regulations_000.pdf
- Rules for everything that goes in your doc.
- Most important rule
  - "Theses and dissertations that do not conform to these regulations will not be accepted by the School of Graduate Studies or by the National Library for microfilming."

Some facts

- The regulations speak mostly of items you don't really care about.
- Your thesis document is an embodiment of what you did.
  - Make it a good read.
- Most professors know little to nothing about the actual process of putting together a thesis.
  - They will not admit this
- The following guidelines are for a "normal" thesis.
- The cruelest moments occur at final inspections by the Program Administrator.

Content that is your thesis document

- Front Matter
- Chapter 1 - Introduction
- Chapter 2 - Literature Review
- Chapter 3 – Your Artifact(s)
- Chapter 4 - Experiments and Analysis
- Chapter 5 - Summary, Future Work
- Back Matter

Front Matter

- Title page
- Author's declaration
- Abstract
- Acknowledgements
- Dedication (if included)
- Table of Contents
- List of Tables
- List of Plates
- List of Figures
- List of Illustrations
- List of Appendices

Back Matter

- Appendices
- Endnotes/Reference List/Bibliography
- Glossary
- Index

Chapter 1- Introduction

- Provide your thesis statement
  - Usually in the first paragraph
- Provide a brief introduction to the field of your thesis statement
  - Set the stage relative to your thesis statement
- Explicitly states your "Research Contributions"
- States how the rest of the document is organized (recommended)
  - Foreshadow anything that the reader should be aware of in your document

What is a "Research Contribution"?

- Research
  - systematic investigation concerning a subject in order to establish significant <u>new knowledge</u>.

- Contribution
  - <u>Items given</u> by an actor <u>to others</u>.

- Research Contribution
  - The actor's significant new knowledge given to humanity
  - We shall refer to Research Contributions as "it"

Research Contribution Metaphors for "it"

Chapter 2 - Literature Review and Necessary Background

- Discuss what everyone else has done that is related to your thesis statement

- Cite all pertinent literature
  - Reader can go here if they need something
  - Lean toward peer-reviewed, academically available publications
    - Publications should be "new " unless they are seminal works

- Cite all work that the reader will need to know about in order to determine the merits of your work.
  - Show what is critical in this chapter
    - If it is important but big, put it in an appendix

- The literature review is where you disclose to the reader the "academic tools" you will use to make your case.

- This chapter describes the context and tools "before it" was made

Chapter 3 - What you did-your artifacts

- Tell them what you thought up
  - Theories, algorithms, tests
- Tell them what you built
  - Materials, methods, procedures, programs
- Put all the necessary big stuff in appendices
  - Program code, example data
- Disclose what you used from others
  - Tell them to look in chapter 2 for details
- Make sure you explain how it all hangs together
  - Assume the reader knows nothing about what you did
    - Not a bad assumption
- This chapter is about how it "should" work

# Chapter 4 - Experiments, Results and Analysis

- What did you do with all your tools?
  - Describe the experiments in detail
- What results did you get?
  - Here is where the data goes
- What do the results mean?
  - Here is where you use the data to support your thesis claims about research contributions
- Tie it all back to your thesis statement?
  - How do your results support your thesis statement and your research contributions?
  - Make sure you disclose what worked and what didn't
- This chapter is all about how it "did" work

Chapter 5 - Summary and Future Work

- Tell the reader what you did in the form of a summary

- Restate your thesis statement

- Tell the reader how your results support your research contributions

- Tell the reader potentially fruitful areas where your work can be extended because your work will now be another tool for others to use.

- This chapter is all about bragging and how it "could" work

Do not get Discouraged!

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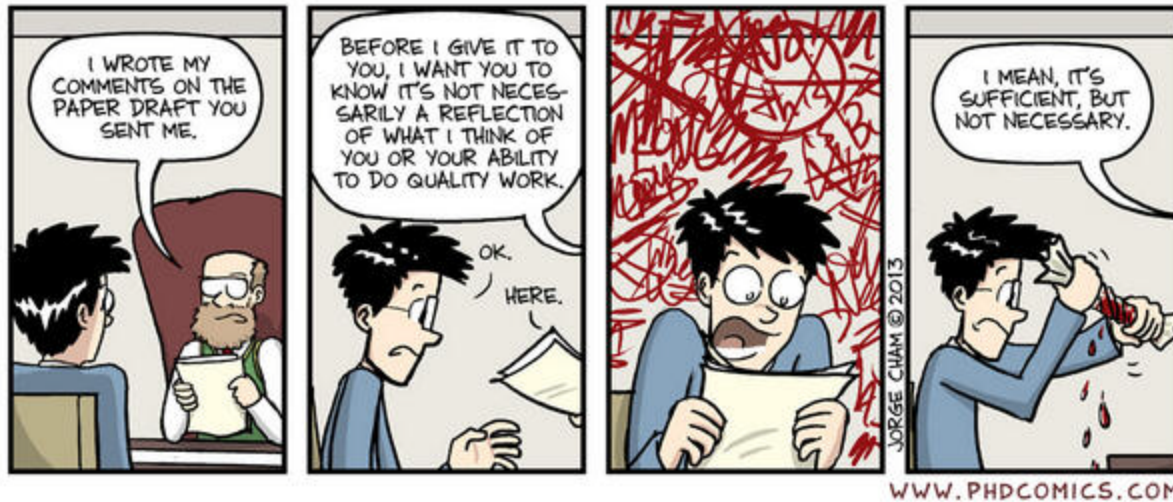
Useful Tips

- Have a native-English speaker read your thesis to see if it makes sense

- Write in this order if possible
  - Chapter 2 + bib, 4, 3, 5, 1, everything else

- Do not keep handing in a slightly different version to your supervisor

- Do not time it so you defend in the summer or really really near the end of term

- A picture is worth a thousand words