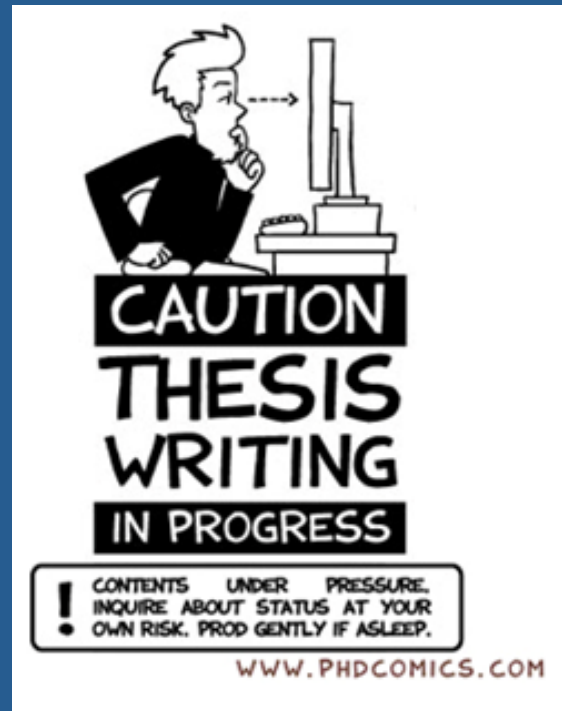


HOW TO WRITE A PHD



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Adapted from Geva Greenfield's lecture

TOPICS

- Before & During writing-up
 - Requirements & Timeline
 - Content
 - Style and form
 - What to aim for – Expectations
 - Tips & pitfalls
 - Final product and submission

PHD → THESIS

- High quality presentation that reflects the hard work & new knowledge & expertise acquired during the PhD
- What is a PhD?
 - In-depth study & critical examination of a specific topic
 - Original and creative piece of research developed autonomously
 - Provide new knowledge and useful discoveries
 - Work of publishable quality in scientific journals or international meetings
 - **Thesis should reflect this**
 - Exercise of patience & frustration (not afraid to start again)
 - Learn and develop skills to navigate the unknown & be your own judge
 - Opportunity to make friends and new colleagues (build network)
 - **Use this to your advantage when writing the thesis**

PHD THESIS

- Before starting
 - Find your bearings
 - Revise relevant information from College website on the thesis and viva
 - Reflect on what makes a good thesis : expected content and form
 - Read examples of theses
 - Read the recent literature
- Getting started
 - Make a plan – Content and timeline
 - (Update) Thesis content - feedback from supervisor
 - Make a writing plan /list of chapters & main sections
 - Scheduling (supervisor feedback and proof reading)
 - Make a checklist & timeline : content & admin issues
 - Budget sufficient time

REQUIREMENTS (1)

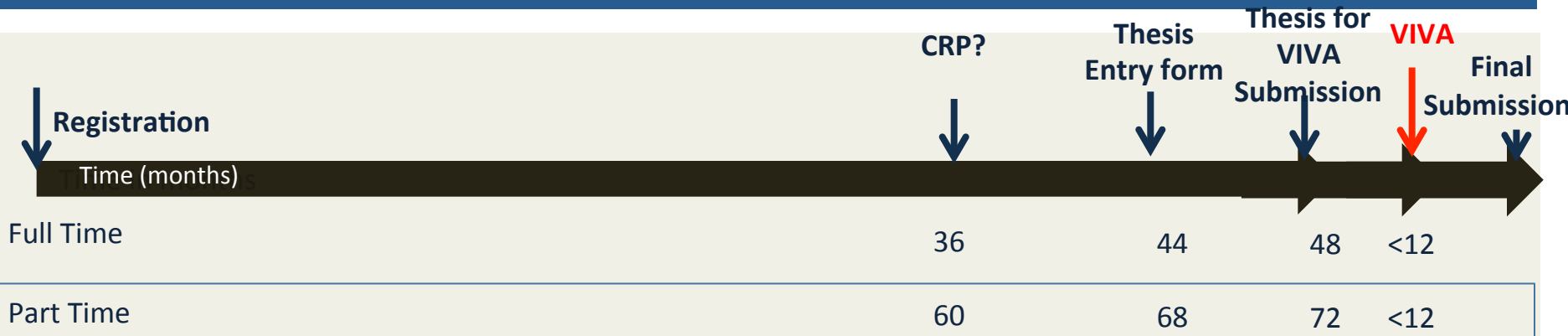
- The thesis shall:
 - Candidate's own account of his/her work – mostly accomplished after the PhD registration
 - Sole or collaborative work - Declaration of own sole or shared work⁽²⁾
 - Not submitted for similar degree elsewhere
 - Not be a series of papers – published work can be included
 - Acknowledge the work of others or self published work: Copyright issues (permission & declaration for 3rd party or own published work/papers, etc)⁽³⁾
 - In English (In a foreign language IF agreed by graduate School)
 - <100,000 words(excluding bibliography/references/appendix, including footnote)
 - Thesis must be submitted in the adequate electronic format & in accordance with instructions obtainable from the Academic Registrar ^(2,4)

(1) Regulations for a PhD:

[www.imperial.ac.uk/media/imperial-college/administration-and-support-services/registry/academic-governance/public/regulations/2015-16/academic-regs/PhD-\(including-MPhil\).pdf](http://www.imperial.ac.uk/media/imperial-college/administration-and-support-services/registry/academic-governance/public/regulations/2015-16/academic-regs/PhD-(including-MPhil).pdf) ; (2) See page 6 of above document; (3) Reproducing third party or own work in a thesis

www3.imperial.ac.uk/scholarly-communication/spiral-digital-repository/phd-theses/third-party-copyright; (4) www3.imperial.ac.uk/registry/exams/thesisandvivas.

TIMELINE⁽¹⁾



1. Initial thesis submission – Viva copies

- Nomination of examiners and Examination entry form
- Thesis declaration form (Registry)
- Writing-up status form : CRS – completing research status : in college or away from college (no access to facilities or formal supervision)
- Electronic submission – www.ethesis.co.uk⁽²⁾ → examiners
- [Submission checklist](#)⁽³⁾

1. Final thesis submission - Final copies

- Corrections if needed
- Spiral Submission , the College Digital Repository⁽²⁾ – open access

⁽¹⁾ <http://www3.imperial.ac.uk/registry/exams/thesisandvivas>; ⁽²⁾ https://workspace.imperial.ac.uk/registry/Public/Current%20Students/Submission%20Checklist%20for%20Imperial%20College%20Degrees_Dec%202014.pdf; ⁽³⁾ https://workspace.imperial.ac.uk/registry/Public/Current%20Students/Submission%20Checklist%20for%20Imperial%20College%20Degrees_Dec%202014.pdf

A GOOD THESIS (1)

ORIGINAL WORK?

1. Your own!

- Own words, ideas and judgments
- Careful of plagiarism : Text and ideas: Quote, references & attribute

2. New work =

- New data
- New methods
- New interpretation
- New application
- New questions
- New way of testing knowledge
- New connections

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2. New work =
 - New data
 - New methods
 - New interpretation
 - New application
 - New questions
 - New way of testing knowledge
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A GOOD THESIS (2)

- Good discussion of strengths and limitations – methods and results
- Sharp summary of results and importance of thesis contribution
- Has an appreciation of what comes next
- Appreciation of implications of results in wider context

- Focuses on the interesting and important information
- Attention to details:
 - Well-illustrated with figures and graphs (Acknowledge permission if needed)
 - Written without grammatical and spelling errors

EXAMINERS' EXPECTATIONS

- **In short – a coherent, readable and well presented “credible” story**
- Interesting piece that they can learn from – leading to interesting scientific discussion with an expert in the field
- Look for:
 - Adequate knowledge of the field
 - Know the literature in depth and breadth
 - Comprehensive, relevant and up to date literature
 - Well reasoned and well designed studies
 - Clear and logical presentation of key results -Judicious choice of figures and tables
 - Effective arguments and conclusions
 - Well written – Accurate Unambiguous
 - Attention to details – (minimise typos!!!)
 - Coherent – strong rational and story line
 - Convincing
 - Honest – contributions of others
 - Implications & Limits

EXTERNAL EXAMINER'S CHECKLIST

Why? So what? Do I believe it?

- ✓ Research aims clear?
- ✓ Literature reviewed/critiqued?
- ✓ Key papers included?
- ✓ Theoretical basis sound?
- ✓ Conjectures consistent with theory?
- ✓ Appropriate methodology?
- ✓ Evidence collected ethically?
- ✓ Sufficient evidence?

- ✓ Convinced of reliability and validity?
- ✓ Findings assessed against literature?
- ✓ Findings make significant contribution to the field? How?
- ✓ Any inconsistencies?
- ✓ Conclusions/take home message?
- ✓ Convinced that the work was carried out by the student?

IS THE EXAMINER AN EXPERT IN YOUR FIELD?

Non experts – can be even more objective & critical

EXAMINERS DON'T LIKE

- Bad thesis which are painful to read-
 - Not interesting or too much material badly summarised or organised
 - Need to guess, hypothesise or have to synthesise results to extract take home messages
- NO-NO:
 - Lack of objectivity
 - Small or badly described problems
 - Poorly reasoned & pre-conceived idea not based on data
 - Badly-designed & executed experiments
 - Poorly present methods – not reproducible
 - Insufficient analysis quantitative analysis – only describe and does not explain results
 - Repeats or confirms well-established facts
 - Has poor presentation and choice of graphs and illustrations
 - Overselling and under selling results
 - Errors and Badly reference own or third party work
 - Conclusions not aligned with results
 - Too many grammatical and typing errors & lots of repetitions
 - Poor use of English & lack of precisions
 - Sloppy presentation
 - Arrogance and failing to acknowledge contribution of others

PHD THESIS

- Before starting - Find your bearings
 - Revise relevant information from College & on the viva process
 - Reflect on what makes a good thesis : expected content and form
 - Read examples of theses from your Department
 - Read the old and recent literature
- Make a plan – Content and timeline
 - (Update) Thesis content - feedback from supervisor
 - Make a writing plan /list of chapters & main sections
 - Scheduling (supervisor feedback and proof reading)
 - Make a checklist & timeline : content & admin issues
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TYPICAL THESIS CONTENT

- Title page
- Declarations (originality, copyright, thesis declaration form)
- Table of content
- List of figures and tables
- Acronyms
- **Abstract**
- **Introduction**
- **Literature review**
- **Aims and Objectives**
- **Methods**
- **2 to 4 substantial results chapters (include discussion)**
- **General discussion**
- **Conclusion - implications and future directions**

SPECIFIC CONTENT

- Introduction (WHY?)
 - Literature review
 - Context
 - Theory
 - Gaps
- Objectives
- Methods (WHAT and HOW? In sufficient details)
- Results (WHAT did you find?)
 - Careful selection of figures & tables
 - Add texture !
 - Style according to your discipline
- Discussion (WHAT does it means?)
 - Strengths & limitations
- Final chapter
 - Conclusions and suggestions for further work
- References
- Appendices (additional details, published papers & permission for copyright)

SOME DISCIPLINE

- Good writing is challenging!
- Establish an undistracted writing routine – that works for you
- Start with relatively detailed structure - Skeleton
 - Table of of content
 - Main sections
- Flesh it out
 - Start with the most comfortable chapter - easiest (previously published paper, clearest results)
 - Small pieces
 - Set realistic deadlines/deliverable



SOME DISCIPLINE

- List and tick
- Set realistic goals and reward yourself for even a little progress



- Work in bursts; take short breaks
- Don't stall on details, walk away (ideas/logical flow first, style after)
- Seek help from the experts: supervisor, library, faculty training programs
- Rest chapters
- Consistency across chapters

SELL YOUR IDEA!

Keeping your ideas short, simple and clear:

- Describe and justify worthwhile, single, overall objectives of your research
- Articulate specific aims that are clearly related to one another and logically fit under the umbrella of the overall objectives
- Present gaps in our knowledge & implications
- Plant the seed for achieving each specific aim by presenting the questions to be asked which will fill the gaps

→ **Rational and objective of your research in a nutshell**

Adapted from Geva Greenfield's lecture

WRITING STYLE

- Make the presentation clear and simple but precise & to the point; avoid verbose
- Think of the reader/reviewer – “lazy”
- Give all the information in a user-friendly but unambiguous way:
 - Assume total ignorance (or research subject but not dumb!) on the part of the reviewer
 - Provide all of the required conceptual background – basic and in simple terms
 - No abbreviations or acronyms without definition
 - Use diagrams to illustrate concepts and models or conceptual framework – well labeled and explained
 - Make sure figures and tables are introduced and referred to - or omit them
 - Use formatting for emphasis -> not too much
 - Use key words - don't worry about repetition of terms

LINK YOUR WORK TO YOUR FIELD

- Describe existing research and how your work builds on it:
 - Are you contesting a view?
 - Are you making existing theories/evidence more robust with additional perspectives?
 - Are you filling a gap?
- How are you adding value to your field?
- Clearly identify own contribution : “I” rather than “We”

DON'T FORGET (1)

- Take detailed notes during your PhD
- Develop a filing system
- **BACK UP!**
- Copy your research log
- Check University regulations & deadlines
- Set clear & realistic goals for each week/day/hour
- Use your outline & be organized
- Set yourself harder deadlines and milestones
- Repetitions, stagnation and long hours is normal

- Choose examiners carefully – defending a well written thesis should be challenging but fun too!

DON'T FORGET (2)

- You need to practice writing – courses, papers etc
- You need to read PhD theses (not least so you know what being the audience for a thesis is like)
- It takes longer than you think – plan enough time
- **It will likely take many iterations to make it very good and select most appropriate results, review / reshape the essential logical skeleton or argument of your own thesis or research.**
 - **Stop – forget – start again**
- **Final details and proof readings essential – help from colleagues and non experts (friends)**
- There are moments when you will not enjoy it as much as you thought you would – it's normal
- **Stay positive:** If your are stock writing up, it is because you have nearly finished your PhD!

EXPECTATIONS FROM SUPERVISORS

- Be pro-active
- Take the lead of your PhD & thesis
- Style and writing reflect quality of the work
- Allow & agree on sufficient timeframe for feedback & chapter revisions
 - E.g. some supervisors cannot judge the work unless it is presented completely → present a neat, complete version of each chapter
 - Some supervisors stop reading if too many mistakes → proof-read thoroughly and spell checked
 - Don't expect a chapter to be read many times
- Contingency plans for unexpected delays

→ Your supervisor wants you to have a good thesis but it is your responsibility to deliver

REVISING A DRAFT (STYLE)

Create your own checklist:

- Does the content match the title ?
- Are important points emphasized enough ?
- Is the content within each section appropriate ?
- Is there a logical sequence ?
- Are information sources acknowledged ?
- Do the conclusions relate to the objectives & results ?
- Have you followed the conventions and regulations ?
- **Is the meaning of each sentence clear - or open to interpretation ?**
- **Can long sentences be broken down or written more efficiently ?**
- **Is the language, terminology, and presentation consistent across chapters**
- **Are all inserts well explained, readable, labeled and used?**
- **Ask a friend who knows nothing about the subject to proof read**

REVISING YOUR OWN DRAFT (CONTENT)

- **Self criticism– be you own examiner!**
 - Why is it important? What critical information would be missing without this work?
 - Why did you use this method/approach
 - Be clear on its advantages and limitations
 - Is your interpretation the only possible explanation?
 - How strong is the evidence from your results? Does it confirm your hypothesis
 - Support from the literature
 - Confirmation from further work
 - Anticipate the debate!
 - Can the work have been done in another way?
 - If you were the examiners – what would you pick on?
 - What other results might you want to see?
 - Ask a colleague to give feedback; Think about the Viva

VIVA: TYPICAL QUESTIONS/TOPICS

- Can you summarise your thesis in 5 minutes?
- What are your main findings?
- What is original about your research?
- Describe your methodology and why you decided to use this – couldn't you have done another way?
- Can you highlight the major contribution that your thesis makes?
- How do your findings relate to the literature?
- Why are your results different than so and so?
- Who are the most exciting research questions in your field?
- What has been published on the subject in the last 6 months?
- But also – anything from your undergraduate or previous studies (evidence of fundamental understanding of the area)
- Have you seen the latest paper on ... last week?
- Can you explain what you mean here or how you did this?
- What recommendation would you make to policy makers?

WHEN IS IT GOOD ENOUGH TO SUBMIT?

- The decision to submit a thesis rests with the candidate alone.
- Opinion of supervisor(s) matter !
- [Checklist](#)

SUMMARY - TIPS

- **The better the thesis the easier the Viva**
- Commitment
- Organization and planning
- Write continuously
- Less is more:
 - Say more with less → difficult and needs practice
- Do (very) good enough
- Realistic timeline
- **Nothing is set in stone**
- **Develop skills to double check your work**
- **Edit work of others**
- **Write and sleep on it**
- **PhD is a marathon – some miles are easier than others**

SUMMARY - PITFALLS

- Poor organization & Time management & Starting too late
 - Procrastination & Over-perfection
 - **Not an integrated body of work; disjoint chapters, too descriptive and not analytical or experimental enough**
 - **No compelling case made for the theoretical or practical utility of anticipated findings**
 - **Saying too little on too much – too much on too little – repetition**
 - Lost in complexity and abstraction
 - Bad choice of figures
 - Too many typos
 - Cumbersome sentences
 - **Writing fatigue: general discussion –not summary and highlighting its importance**
- **Look matters – Look is not enough**

USEFUL LINKS AND WEBSITES

- Thesis submission and viva
 - <http://www3.imperial.ac.uk/registry/exams/thesisandvivas>
- Passing your viva & examiner perspective
 - <http://www3.imperial.ac.uk/graduateschool/currentstudents/onlineresources/passingyourviva>
- Preparing your thesis for submission to the Spiral Digital Repository (permission to reproduce own or third party work, plagiarism awareness)
 - <http://www3.imperial.ac.uk/scholarly-communication/spiral-digital-repository/phd-theses>
- Compulsory course
 - <http://www3.imperial.ac.uk/graduateschool/plagiarismawarenesscourse>
 - <http://www3.imperial.ac.uk/scholarly-communication/spiral-digital-repository/phd-theses>
- Completing Research Status - Writing-Up
 - <http://www3.imperial.ac.uk/registry/researchdegrees/writingup>
 - https://workspace.imperial.ac.uk/registry/public/Exams/ethesis_FAQ.pdf
- [Academic ladder](#)
- <http://www.timeshighereducation.co.uk/news/how-not-to-write-a-phd-thesis/410208.article>

GOOD WRITING