

# How to get a PhD

Dr Christina Cobbold

University of Glasgow

## How to get a PhD

To get a PhD you have to

- ▶ find out what is needed
- ▶ have the determination to carry it out
- ▶ take responsibility for your progress
- ▶ have a degree of single-mindedness

## What's Needed?

To get a PhD you must write a thesis – about 100-200 pages. It should present a unified body of work such as could reasonably be achieved on the basis of three year's postgraduate study and research.

The following criteria will be used to judge it. It should

- ▶ be **original** making a significant contribution to knowledge or understanding in the field of study
- ▶ contain material **worthy of publication**
- ▶ **reflect comprehensive appreciation** of relevant literature
- ▶ **exercise critical judgement** with regard to both the candidate's work and others in the same general field
- ▶ be **literate** with **adequate references**

GOOD NEWS!!!

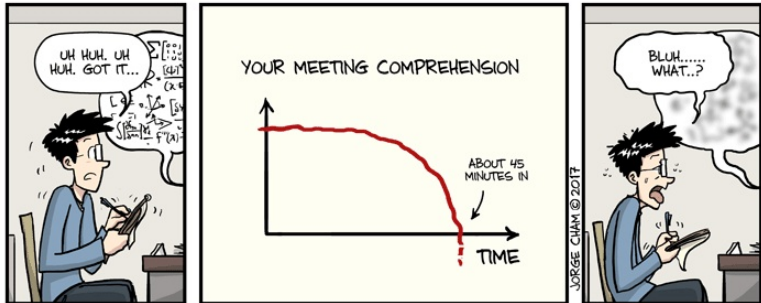
You do **NOT** have to make an enormous breakthrough which shakes the foundations of mathematics or statistics

## Thesis assessment

- ▶ It will be read by **two** examiners appointed by the university one *internal* and one from another university. The internal examiner will not be your supervisor
- ▶ There will be an oral **viva voce** examination (2-3 hours typically) in which you will have to defend the material in your thesis and show general knowledge of the work and its wider context.

# Interacting with your supervisor

- ▶ Meet regularly
- ▶ Prepare for your meetings - come to each meeting with:
  - ▶ List of topics to discuss
  - ▶ Plan for what you hope to get out of the meeting
  - ▶ Summary of what you have done since your last meeting
  - ▶ Notes from your previous meeting
- ▶ Always be honest about your progress



## Interacting with your supervisor -continued

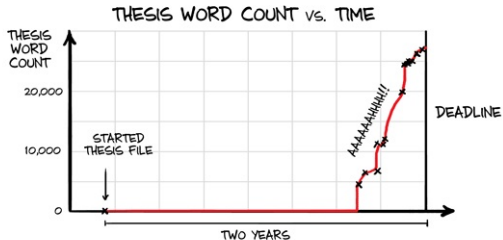
- ▶ Always show your supervisor the results of your work as soon as possible
- ▶ If you disagree with your supervisor, state your objections or concerns clearly and calmly



- ▶ Each of you will have a unique relationship with your supervisor

# Caveats

- ▶ All research involves risk – your project can fail
- ▶ Research takes much longer than you feel it ought
- ▶ Your rate of progress will vary wildly
- ▶ Do not spend all of your time on literature review
- ▶ Break down writing your thesis into manageable stages



THE MAIN THING MY THESIS PROVED WAS  
HOW MUCH I PROCRASTINATE

- ▶ Do not lose contact with your supervisor



## Become a critical attentive reader and listener

You must make the transition from the passive mode of learning that traditional lecture courses encourage to an active and critical learning style. When you read a paper or listen to a research talk, ask yourself these questions:

- ▶ What was really going on there – what was the motivation for doing this work and what exactly was accomplished?
- ▶ From where did the author seem to draw the ideas?
- ▶ What would be a reasonable next step to build upon this work? What questions are left unanswered?
- ▶ What ideas from related fields might be brought to bear upon this subject?
- ▶ Can I use any of these techniques in my work ?

## Daily Life

- ▶ You need constant feedback. Discuss your research with anyone who will listen – even when they do not understand
- ▶ Explain your work to fellow students – if you cannot explain it there may be a reason .....
- ▶ Explaining and writing down your ideas is the best way to debug them and can lead to new ideas...



Tom, Barcelona 2008  
Talked about magnitude  
Of metric spaces



**André Joyal:** *Don't you think magnitude is a bit like entropy?*



Back home in Glasgow...



**Christina Cobbold:**

That's funny. Ecologist sometimes use entropy to measure biodiversity

## Seminars and talks

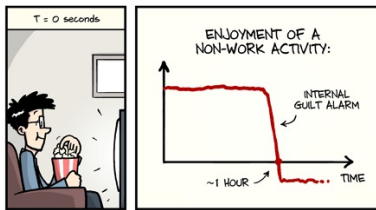
- ▶ Regularly go to seminars, even if you think you won't understand the talk.
- ▶ Write down something about the talk, even if all you can write down is the general topic and the technique they used.
- ▶ You can also learn from the speakers presentation style, what was good, or bad.
- ▶ Ask questions



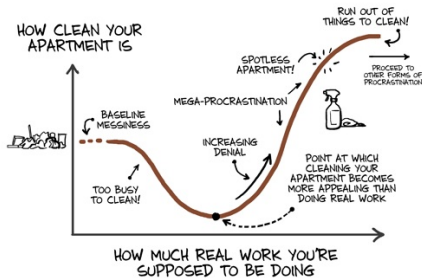
- ▶ If you are afraid of public speaking, volunteer to give lots of talks - E.g The Burn !

# Daily Life

- ▶ You will have to deal with isolation and loneliness - remember you are not alone - talk to people - you are part of a research community
- ▶ You will have to deal with getting a good work-life balance



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AND  
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PhD