Common pitfalls

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Introduction

Thank you all for coming.

These slides are just notes for me.

Research

You know me for my teaching, but I also do research; and lots of it.

This project may be a new kind of experience for you. First opportunity to do something like research.

You are being freed – a little bit – from the imprisonment of an undergraduate degree. A great learning opportunity! Also:

- ▶ A thousand new and interesting ways to go wrong!
- ▶ Can be disconcerting (don't worry, that's normal).
- ▶ But do be disciplined (gets worse; wait for the PhD).

Disaster averted

Honours projects are a lot of hard work, and your freedom implies also a freedom to go terribly wrong.

Most of you will be fine.

Yet by the laws of probability, a few of you won't.

If by giving this talk I can head off disaster for even one or two of those few, then this talk will have been well worth while.

You are marked on your dissertation

You are marked on the dissertation.

Not the program code.

Not the effort you put in.

Not the libraries you had to hack to make it work.

There is no box in the marking rubric for 'Great programmer' (though perhaps there should be).

Also: read and pay attention to the rubric! Your markers will.

Well-structured, consistent, navigable, informative, unpretentious document

- No typos in the title or abstract. Would you submit a CV with typo in the header? If you did, would you get the job? Spell-check the document. Beware last-minute 'improvements'. Sleep on the document.

- Abstract must be clear and memorably and concisely explain what you did and why. So your reader can remember it an hour later.
  Cf. the elevator pitch. As an exercise, write an elevator pitch for everyday objects: a window; for a door; for a bus.
  Use your first reader to refine this. Writing abstracts is difficult: your first abstract will be awful.
  I tend to spend a lot of time refining the essence of a project with my supervisee. Also helps with prioritisation.

Well-structured, consistent, navigable, informative, unpretentious document

- Table of contents. Page numbers for reference.
- Informative section headings.
- Terminology must match up: call a spade a spade, not 'spade' in the abstract, 'shovel' in the section header, and 'digging tool' in the body of the text.
- No waffle. Delete 'In order to'.
- Don't be pretentious.
- I favour first person.
- 1 paragraph = 1 idea. Idea evident in first two lines of paragraph. See my talk on technical writing.

Your dissertation will be read non-linearly, by a non-expert

- You will spend hundreds of hours producing your dissertation. Your marker will not put in equal effort: cue demo. Less attention $=$ more marks.
- Understand that your dissertation will be read quickly & non-linearly.
- Design it to support non-linear queries; e.g. pick a spot that your reader may land on: can you work backwards?
- Your dissertation is a tree, but rooted at the start and at the end. Make it easy for a monkey in a hurry to climb around it. Specific pointers ("We have seen / will see" $\rightarrow$ "We saw / will see in Subsection 4.1").

Your dissertation will be read non-linearly, by a non-expert

- You're expert; your marker isn't. (Significantly different from undergraduate experience thus far.)
- Explain yourself.
- Especially: if something that looks easy, isn't easy, then make sure to say so.
- Explain technical design decisions.

Choose what you're comfortable with

- Go with your gut for a supervisor (like girls, bikes, universities, and jobs). If you feel uncomfortable when you first meet a person, thing, or place – then chances are it will only get worse.
- Don't be afraid to dump your supervisor. I guarantee he or she won't be offended.
- Don't do a boring topic. Makes it harder to get out of bed.
- The topic doesn't have to be original or new.
- You are responsible for your project, not your superviser. (I have a story about that.)

Handling your superviser

- Understand your superviser's limitations: may be imperfectly organised and forgetful. Understand the demands on your superviser's time: many.

- Make appointments and write e-mails in a professional manner. Give your name, title of dissertation, when you last met, subject, etc.
  E-mails should be self-contained. Give all information necessary for action on a single e-mail.
  Attach all necessary documents, give precise pointers: "page 60 of pdf attached, on wombats", not "section on wombats of document I sent you last week" ("set questions from our previous correspondence").

- You're asking your marker for marks, so you need to do the work. That's just the dynamic.

- Pester people for meetings and results. Be polite, but insistent. Follow up emails with phone calls if necessary. (Oil)

Politics

- In conclusions, be self-critical and honest. If you try to gloss over stuff your reader may notice.
  You will look stupid or dishonest if your reader spotted it, and you lose an opportunity to look insightful and thorough if your reader hadn't noticed it.
  Note: your marker is expert at seeing through bullshit. Don't even try. (You just don't have the experience: kids and cookies).

- If first deliverable is poor, make sure to speak with second marker before submitting second deliverable.

- May be useful to invite second marker to look at a draft (demonstrates that you care; may transfer ownership of some errors).

- Listen to the second (and the first) marker, and act on their suggestions, and be seen to act on these suggestions. If you don't act on them then write a short e-mail to explain why.

Time management. Overambition = laziness.

- Manage time. Structure the work so if you run out of time you still have something.
- Easier to dream up an overambitious project than to envisage a realistic one — but then harder to execute an overambitious project than a realistic one.
- If possible, do just one thing (one-and-a-half, max).
- KISSME - Keep it something simple and minimal that can be executed.
- Software libraries and their perils (discuss compatibility).
- How to recover from running out of time: e.g. analyse why it happened (why were the libraries not compatible?).

Tell a story

- You are not the hero, the research is. (Your marker will be all too familiar with how difficult research is.)
- If something that looks easy, isn't easy, then say so.
- You don't get marks for being a good programmer. Sorry.
- You do get marks for telling a great story. People retain narratives.
- Typical structure of a dissertation: write a program, evaluate it, say why it isn't good enough, suggest future work.

It's OK to be human. But understand what that means.

- Allow yourself to be tired. Take breaks.
  Tiredness distances you from who you really are, which can
  confuse you if you're soul-searching.