On technical writing

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The laws of writing a good dissertation

Thanks to Alasdair Gray for inviting me to speak.

Thank you all for coming.

Technical matters

A dissertation is typically 50–70 pages long. Longer or shorter is fine but may be a sign of something wrong — check with your superviser.

Your dissertation document is what gets marked.

This means that a good project with a poor write-up is not a good dissertation, whereas a mediocre project with an excellent project may be a good to excellent dissertation . . . and be marked accordingly.

A solution to a problem is not a solution to a problem until your marker understands: a) the problem and b) your solution and c) cares.

Get the basics right . . .

The basics

We need to know who you are!

Your document must include a title page with:

- The title.
- Your name.
- Your supervisor's name.
- The date.

Put in also:

- Your regno.
- Your HW e-mail.
- Your second superviser's name.

Helps avoid confusion.

A dissertation is:

A dissertation is a piece of technical writing.

~~Top~~ priorities in technical writing:

- Clarity.
- Communication.
- Stating the facts.

Technical writing resembles journalism: you ~~usually~~ don't care who wrote ~~a newspaper~~ the article; you just want ~~to know~~ the story.

If this is communicated clearly, briefly, and factually, then you'll remember the story.

If the writer ~~writes like he~~ only cares about hearing himself speak, or is a narcissist, or an idiot who can't spell—then you'll just stop reading.

So will the person reading your report.

Your dissertation is not:

- A mystery novel—don't make the reader work to figure stuff out.
- An odyssey with you as the hero—don't boast, waffle, or wax lyrical on how hard something was.
- A report of a chemistry experiment.
- A tweet.

Specific priorities of F21RP:

- Planning to do something.
- Trying to do it—perhaps you succeed, perhaps you don't. More on that later.
- Stating what you've done.

A dissertation should mention:

Though a dissertation is no place to boast, you must still make clear where the hard bits were.

It is extremely common for something that should have been easy, to turn out to be very difficult. If something was difficult for pertinent and interesting reasons, then say so.

API incorrectly documented? Say so. Technology used that you had to create from scratch? Say so.

Quite often, these difficulties are very revealing. Feel free to discuss the background social or commercial reasons that may have led to this obstacle being in your path.

Examples: two companies in formal alliance are actually in competition. How good do you think their "standardised" APIs will actually be?

The measure of success

You need not necessarily attain your stated goals to write a good report. Actually, some of the most interesting projects are the ones that 'fail'.

~~So long as~~ If your report reflects ~~that you made~~ a ~~good~~ plan, and intelligently reflects on why ~~that plan~~ it failed, then we can award good marks.

The person marking your report may or may not be expert in the topic of the report, but he or she will be expert, from long and bitter personal experience, in how plans that looked great from a distance can unravel. I guarantee it.

Some big fat DOs

DO have a table of contents.

DO have page numbers.

DO have informative section and subsection titles.

DO use enumerated lists.

DO have an introduction, a middle, and conclusions.

DO let 1 paragraph = 1 idea.

DO make sure the first sentence of each paragraph is pertinent to that idea.

DO provide specific references:

- "We shall see later that X=Y" becomes "We prove X=Y in Section 4.5".
- "We saw the API was poorly-documented" becomes "In Section 4.6 we noted the API was poorly-documented".

Every sentence should fit

Of every single sentence in your dissertation ask:

> "Why is this sentence here?".

If you cannot answer that question quickly and evidently, then neither can your reader. Delete or edit that sentence.

A quote of the great philosopher psychologist Hannibal Lecter: First principles, Clarice. Simplicity. Read Marcus Aurelius. Of each particular thing ask: what is it in itself? What is its nature?

Now for some basic laws of dissertation writing, in no particular order:

The law of spells

If spelling and grammar are wrong, then you look an ass.

Incorrect spelling and punctuation are errors. The occasional typo is no problem but consistent errors destroy your credibility.

Sometimes, just one telling slip-up can spell disaster: Dan Quayle ran for president of the USA and misspelled ‘potato’; he lost.

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Is this blogger somebody you want to spend time with?

Posted by: Anonymous

Is their going to be snow tonight same on monday and the last thing going to be is their going to be a snow on friday.I would like to now very bad but i hope their is going to be a snow storm on friday thank you write back as soon as you can Thank you very much.

If you don't respect language, why should your reader respect you?

The apostrophe

RESIDENTS REFUSE TO GO IN THE BINS
RESIDENTS' REFUSE TO GO IN THE BINS

(Example courtesy of Lynn Truss.)

Other matters:

- Their vs They're. Your vs You're. Its vs It's(=it is).
- Potato's (possessive) vs potatoes (plural). Check out `http://www.chompchomp.com/rules/aposrules.htm`.

More at `http://www.grammar-monster.com/`.

Given a certain level of education, only prats, bastards and people who won't listen, get this stuff wrong. People with humility and who care about the quality of what they do, have long since learned this stuff and get it right.

Basic editing

'In order to X' can almost always be replaced by just 'X'.

'The main reason' can almost always be replaced by just 'The reason'.

Similarly for 'The principal reason', and so on.

By the way, did you know that principle and principal are different words! (`http://www.grammar-monster.com/easily_confused/principal_principle.htm`)

The law of structure

The parts of your dissertation are:

- The sentence.
- The paragraph.
- The section.
- Introduction. Middle. Conclusions.

The sentence is the basic unit of technical writing

Bad: *High-quality learning environments are a necessary precondition for facilitation and enhancement of the ongoing learning process.*

Good: *Children need good schools if they are to learn properly.*

(Example courtesy of `http://www.plainenglish.co.uk/beforeandafter.htm`.)

Bad: *Your enquiry about the use of the entrance area at the library for the purpose of displaying posters and leaflets about Welfare and Supplementary Benefit rights, gives rise to the question of the provenance and authoritativeness of the material to be displayed. Posters and leaflets issued by the Central Office of Information, the Department of Health and Social Security and other authoritative bodies are usually displayed in libraries, but items of a disputatious or polemic kind, whilst not necessarily excluded, are considered individually.*

Good: *Thank you for your letter asking for permission to put up posters in the library. Before we can give you an answer we will need to see a copy of the posters to make sure they won't offend anyone.*

Use of keywords

Be consistent in your use of technical language. Choose one word to describe a concept and stick to it.

Do not call your program variously ‘program’, ‘project’, ‘system’, and ‘code’.

Do ensure keywords in headers match keywords in text, because:

- Readers scan for keywords to understand structure of text and ideas.
- Readers assume by default that distinct words refer to distinct concepts (wouldn’t you?).

Keywords are the reader’s keys to the detail.

1 paragraph = 1 idea

Ideally, that idea should be clear—at least in outline—from the first sentence of the paragraph.

Look at your own text, carefully.

Bad:

ActiveX controls are just one part of the whole ActiveX technology, and we should really focus our attention there. ActiveX itself is a revision of Microsofts early OLE standards, which competitors found too desktop-centered. The modifications to ActiveX technology help make network objects more secure, more usable on multiple platforms, and smaller, so they move faster across the network. Of course, some competitors argue that ActiveX and DCOM do not interoperate with multivendor open object standards such as CORBA, and Microsoft has said it will upgrade to work with CORBA, but has not done the implementation at this time. The basic idea behind ActiveX technology is to support platform-independent, reusable software objects, so that an intranet or the Internet can offer a broad assortment of prebuilt functions.

Good:

The modifications to ActiveX technology make network objects more secure, more usable on multiple platforms, and smaller, so that they move faster across the network. ActiveX technology supports platform-independent, reusable software objects, to offer a broad assortment of prebuilt functions across a network.

Some competitors argue that Microsoft has not gone far enough in this revision of ActiveX technology and in its related standard, DCOM, because they do not interoperate with open object standards like CORBA. Microsoft has promised to upgrade to work with CORBA, but this has not happened yet.

(Example modified from `http://www.webwritingthatworks.com/DGuideCHUNK4a.htm`.)

Rule of thumb: use active voice,

just like I'm doing now. It is not recommended passive voice be employed or that one switch voice randomly in their text.

Choose one of these and be consistent:

- I.
- We.
- The author.

I wrote my PhD thesis in first person singular and it worked fine. I write my papers in 'we' or 'the author'. That works fine too.

There's always the one student who thinks that third person passive 'it was considered' sounds clever or correct.

Try this experiment

Experiment: look up some recent Supreme Court judgements here: `https://www.supremecourt.uk/news/latest-judgments.html`

This is the example I looked at: `https://www.supremecourt.uk/decided-cases/docs/UKSC_2014_0216_Judgment.pdf`

The Supreme Court is authoriative (by definition!). It's technical stuff, but the techical writing is down-to-earth and factual.

If 'she' and 'I' are good enough for a Supreme Court Judge, then they are good enough for you.

1.2 Application Methodology For This Project.

For this project is has been decided that the best development lifecycle methodology to use is the waterfall model. This decision has been made due to the nature of the application to be developed, the time constraints imposed on the project and the way the project has to be structured to meet the predetermined project deliverables. It would also have been very difficult to use the spiral model for this project as the intended users of the application being developed would be extremely hard to communicate with on a regular basis.

Not waffle

1.2 Application methodology for this project.
Our choices are: the waterfall model, and the spiral model.
We selected the waterfall because the spiral model would require regular communication with our intended users, and that was impossible.

Rewrite this to be more active and less waffly:

> *In order to determine the most appropriate structure for the application to be developed, two simple structure prototypes were produced. For this project it was assumed that the application being developed would be integrated with the existing online module material. Therefore the prototypes were designed with this in mind and where possible in a manner consistent with the existing material.*

My version

My version:

> *We tested ideas for the structure of our application using two prototypes. Both ensured compatibility with the existing online material.*

Try this:

> *It has also been considered that an interesting variation on this format would be to use flash animation to act out a question scenario. The flash animations would take the place of the textual questions and would provide a more interesting and stimulating learning experience. At this stage, due to the time constraints associated with this project, there is no certainty that flash animations will be used in this way. It is something that will be considered and explored in more detail in the third terms work on this project.*

My version

Flash animations might liven up the user experience but we have no time to set this up.
We may try to do this in the third term.

From the Reith 2005 lectures

One of the reasons that the earliest signicant advances were few and far between was that the technologies of communication had yet to be created, and communication of any kind could be rigidly controlled. While there was only word of mouth, information must frequently have been lost, and the process of innovation forced to repeat itself over and over again. Innovation could not advance exponentially as it does today because there were no means reliably to pass information from generation to generation, or between widely-separated societies. The difficulty of transportation compounded the problem: it was only the wealthy and powerful who could travel to distant sources of information. It was through primitive paintings and tablets of stone, and eventually hand-written manuscripts, that each generation rst began to preserve and reliably to pass its precious knowledge on.

My version

Technology advanced slowly because the technology to communicate was primitive, what there was of it was tightly controlled. Also, transport was difficult, so that few could travel to new sources of information.
Who knows how much information was lost or garbled to word of mouth? Slowly, each generation began to preserve and pass its precious knowledge on; first with paintings, then with stone tablets, and eventually with handwritten manuscripts.
Today, information advances exponentially because we can reliably pass knowledge across different societies, continents, and generations.

I conclude with one more law:

Go easy on your reader, and your reader will go easy on you.