Professor Leighton's rules for thesis writing

1. We are story tellers. Your thesis should tell a narrative, a story. That goes for the whole thesis, how each chapter runs into the next, and satisfies the reader what is the logic behind why he or she is moving from one subsection to the next. It also applies to the literature review. Your literature review should never be just a list of papers, with a summary of each. You should introduce papers into your story as and when they are needed, to provide the evidence, background and 'further reading' to which you believe a reader must have access. Tell a story. Put yourself in the mind of the examiner. They were not there during the research. The 'story' seldom reflects the chronological order in which events happened. Signpost the story for them. At the end of each chapter summarize briefly what this chapter explained and then explain why it logically leads you to address the issues that you are about to discuss in the next chapter. At the end of the Introduction (usually end of chapter 1), state in order what subsequent chapters will be covering, and explaining why one chapter logically follows the next because the way ideas lead into one another in the narrative: outline what all chapters will show, and go through this argument again at the conclusion of the thesis. It will sound repetitive to you, but the examiner will probably appreciate it. Then do the same in each chapter, explaining the narrative that takes you from one section to the next.

2. Start with a thesis plan, and assess how many pages you will assign to each section of the thesis plan to ensure that the thesis length falls within the correct bounds that your degree regulations demand. Typically, in science and engineering, a thesis today exceeds 100 pages but is less than 250 pages long. Longer theses may be acceptable (e.g. in humanities), but the crucial point is to use a plan to work out what your word count will be. Map out in each section what subsections you expect to have. In each subsection map out how many paragraphs you expect to have, and what they will cover; and map out figures you expect to put into it, sketching those figures if you do not have them. This will give you a living document to work on during your PhD, updating it as you go, and adding more detail. It will also help you write, because instead of being baulked by writing a large daunting section starting with the first word and ending with the last (like a novel writer writing a story in one take), you will reduce the challenge to writing a paragraph when you feel up to it, which you can do in a couple of hours. That way, no part of your thesis should feel so daunting that you procrastinate. Feel free to take up an entire wall with your map, for each chapter having a column of post-its or printouts showing titles on the far left of the wall. To the right of that column, add a second column, showing subtitles, spacing them out under which title they fall. To the right of that column, have a third column, showing sub-sub-titles, and so on. On each post-it/printout, state the title and 20-50 words outlining what the (sub)section will cover (you can use these introductions in your drafts thesis at the start of each subsection if you need – you might not keep them in the end, but they will help as you go along). Then to the right of the last sub-section column, add a column with a post-it for each paragraph. This will determine the spacing on the wall of all the subsection titles, so this is a very important column. Perhaps the most important column in science and engineering is to the right of that, the column containing your figures with a caption for each, horizontally aligned with the post-it for the paragraph that introduces that figure. You might have an equations column, depending on the topic. With a wall map like this, you don't have to be daunted by the size of your thesis: write any paragraph when you feel like it, ticking off the post-it when you are happy with it, and you will get through the thesis one paragraph at a time. If you don't have wall space, do this in a ringbinder, or electronically. This paragraph-by-paragraph approach is only one option – just be aware that there are alternatives if you don't get on well with the

approach where you start writing at Chapter 1 and work through to the end to produce a first draft, then continually edit and refine it. Whatever you do, start early – have your first draft ready by end of year 1, knowing that it will probably look nothing like your final draft.

3. Look a few good examples of the items you want to emulate. Chose a good one and aim for that standard. PhD theses are easy to come by… but I know these guidelines are used by undergrads too, when writing their project reports, and these are harder to come by, so you can look mine up at http://resource.isvr.soton.ac.uk/staff/pubs/PubPDFs/Pub2490.pdf

4. The final item you should write, should be your abstract. Remember that it will be the item read first by most readers, and sometime the only part of your work that is read, and by which it is judged. Keep to the local rules that pertain to your abstract (on word counts, inclusion of references and symbols etc.). At the very least, the abstract should cover why you looked at the problem, how you made the investigation, and what you found. When you have finished, get a friend to read it out loud to two of your other friends. Note where the reader falters, and get critical opinions from all 3 friends.

5. A well-written thesis takes me 5 solid days to read and correct. A poorly-written one takes up to 20 days. Not counting the ISVR MSc theses and the external examining of PhD theses, let us suppose that if I have 8 PhD students who each hand me 2 thesis drafts in the year, then assuming the later are well-written (5 days each) that comes to 2 x 8 x 5 = 80 days (or, if poorly written, 2 x 8 x 20 = 320 days). Given that there are about 210 working days in the year to fit in all my jobs, you can see that, if I only read and correct theses and nothing more, there are not enough days in the year to do the job if they are poorly written. Therefore you must ensure that they are well-written before I receive them. It is very bad if you receive back a thesis from me and I have had to identify sentences where I cannot understand the meaning, let alone figures that are crosses in boxes because the printer cannot recognize the Matlab format. Therefore before you submit a draft to me, give a page each to your circle of English-speaking friends (preferably getting them to read the page out loud). You will have written nonsense in your thesis, but will not be able to see it as you will read what you think you wrote, not what is on the page. This is very important: think about how much difference it makes to you if I can read a well-written thesis in 5 days, as opposed to trying to fit the 20 days of actual reading and correcting a poorly-written thesis into my normal working schedule.

6. You will write sentences that are too long – watch out for them. Use simple short sentences for the majority of your writing.

7. Avoid non-standard jargon. Ask yourself if the reader is likely to know the technical terms you use, and only make up your own when you absolutely must (and then please define those terms clearly, preferably using equations and words).

8. Use a symbols list. If you use The Acoustic Bubble list as a basis, it will help you avoid repetition. Use one symbol per definition, and one definition per symbol. Variables should be in italics, and labels should not (mostly this affects subscripts). Define each symbol and abbreviation the first time it is used in the main body of the text, and not afterwards unless to emphasize some point. Also define it in the symbols list. The same is true for abbreviations. A figure or an equation on its own is insufficient to define a symbol: words are also required. Use exactly the same

font and italics/not-italics when writing a given symbol in text, as you used when you wrote it in the equation.

9. Every sentence should begin with the capital letter of an English word or proper name. Never begin a sentence with abbreviations, symbols or digits.

10. Every time a given symbol appears in your thesis (text, symbols list, equation, figure, figure caption, graph axes etc.) it should use exactly the same font and style. The font size should be identical in the equations and main body of text and symbols list, unless it appears as a superscript or subscript.

11. Make sure all graph axes are unambiguously labelled with words, symbols and units (from which the dimension of the numbers can be inferred – if the numbers on the axes are dimensionless, say that on the axis label). I recall someone writing 'bubble wall (microns)' and one reader took it to be 'bubble radius, another thought it was 'bubble diameter, and a third thought it was 'bubble pulsation displacement amplitude'. It turned out to be the distance of the bubble to the solid planar wall, but then when questioned the student could not remember if it was measured from the wall to the centre of the bubble, or from the wall to the point on the bubble wall closest to the solid wall. It finally turned out to be one of those, normalized to the bubble radius (i.e. dimensionless, so the 'microns' in the label was a mistake).

12. If there is potential for you to create ambiguities when labelling graphs of your own data, there is even more so when you copy scans of graphs from other authors. This is because you only copy a snap shot of the original paper, so can omit key contextual material (e.g. omitting a box defining symbol shapes on the figure; omitting the full caption; or, if you do include the original caption, omitting material that the original authors omitted from the caption because it is in the body of their paper). Be especially careful, in your own graphs and in copying graphs of others, of not realising that something which is obvious to you is not obvious to the reader or worse, the reader might assume a different meaning without realising you had another one in mind. So make sure you state somewhere whether error bars are standard deviations or standard error in the mean, or confidence limits (I prefer that statement in all relevant figure captions though if you fear that looks repetitive, state it once in symbols list at start of your thesis). Don't assume the reader will know the dashed line is best fit to data, and the solid line is ideal for a rigid sphere, if you fail to explain that. Very importantly, if you interpolate between data points (in a line or colour or contour map, for example), put dots or crosses to show where the data points are, and state in the caption that info between those is interpolation. If such data points are so dense as to obscure, say, the overall trend in a contour plot, state that you are plotting every tenth point for clarity.

13. You also need to be careful when copying graphs or schematics from other authors because they might use symbols that clash with your own symbol definitions. If that happens, you need to relabel their axes by copying scanned pic into PowerPoint and adding your own labels in place of theirs and re-saving the ppt as a jpeg or tiff.

14. You will introduce ambiguities through all sorts of ways: never, for example, use the word 'size' for bubbles, as it could mean, volume, radius or diameter….if the reader thinks you mean volume, then to say a bubble natural frequency is inversely proportional to bubble size is incorrect.

15. Be careful when comparing two things. Never use subjective terms like ‘agree well’. Do not just compare the means: Remember that 60+/-40 is consistent with 100+/-2, but 90+/-2 is not consistent with 100+/-2. Conduct appropriate tests for significance (which will not be the same for all data… consider for example the different ways that you would treat a normally distributed dataset, and a bi-modally distributed dataset). Sometimes outliers need to be discarded from the data (although check with a colleague whenever you do this, to counteract your instincts to justify actions which make life easier for you)… but sometimes you are interested in the outliers in the data because they show cases of genuine hypersensitivity, in which case averaging with a population of normal sensitivity will hide this important feature. There is no ‘believe’: there is only ‘prove’ or ‘disprove’. Note that sometimes the comparison might be implicit (like when you use the words ‘high/big/small/low/intense’) and on their own these might mean little (if you describe an acoustic field as ‘intense’, do you mean ‘compared to those that are normally heard’ or ‘compared to those normally used to generate radiation force effects’?) – beware of using the implicit comparison without also giving numbers to quantify what you are writing about.

16. Use your spell checker. Do a global search for mistakes which the spell checker will not pick up. For example, students often write ‘form’ instead of ‘from’, and since ‘form’ is not often used in theses, do a global search to check for it. The same applies to writing ‘ration’ instead of ‘ratio’. Be aware of software-specific error indicators (e.g. with Microsoft Word, always search your final draft for ‘Error!’ after you have selected all and pressed F9).

17. Number every equation. Treat equations as if they were words in the text, so follow them with commas and full stops in line in most instances. If Word does stupid things (like capitalising ‘where’ when you write it after an equation), undo the autocorrect option that causes it. When putting punctuation after every equation, which should you use… a comma or full stop? Because commas should be followed by lower case letters in the next word in the text, but because Microsoft word capitalises new paragraphs, it is often safer to place a full stop after an equation and follow it by 'Here' rather than 'Where' unless you go through and make the 'w' of 'where' lower case. If you have a long equation, split it over 2 lines, rather than shrink the font size, and check that items do not get clipped off the end of the equation. So always beware of autocorrects which capitalize the first letter of the first word after that equation. All equations should have punctuation before them (usually a colon), a common in line with them after the equation (usually a comma), followed by an equation number. However that means the equation is part of the sentence, so the next word should not begin with a capital letter. The first letter of the word in the line immediately below a sentence should only be capitalized if the punctuation mark after the equation was a full stop.

18. It is advisable to start renumbering figures and equations from the start of each chapter (e.g. 2.1, 2.2, 2.3). It makes it easier when you insert new figures earlier in the thesis. If you chose not to do this, and instead to run the numbers continuously through the thesis, then make sure you have some scheme for automatically renumbering them (in which case check this scheme works with cross-referencing, and is something standard that someone else can use if, for example, you rely on someone else to make papers out of your thesis). Use the software that is most commonly used, especially taking note which one your supervisor uses (Microsoft Word, Latex etc.) because if you use something that others do not, they cannot easily help you in editing or turning the thesis into papers.

19. Use spaces with care. Place blank lines before and after equations, and below the caption of figures. It is usually best to use a different style (smaller font, italics etc.) for the caption compared to that used for the body of the text. Always have a space after the digit and before the units (usually SI), after full stops at the end of sentences, and before opening brackets (including when the brackets are used for references). Please avoid a caption being on a different page to the figure/table it describes. Avoid big blank spaces taking up the lower half or more of a page, which are usually the result of the author deciding to start every new section on a new page (do this only for chapters, not sections), or have many figures close together without thought of layout.

20. The default line width and font size with which Matlab plots figures are both too small for use in thesis and journal figures. Change the settings. If you use colour, try to use a system that will also make sense when copied into black and white (a yellow-to-brown colour scale will [e.g. figure 8 of http://resource.isvr.soton.ac.uk/staff/pubs/PubPDFs/Pub12669.pdf], but a red-to-blue one will not). For example, if you use lines of different colours that will look the same in black and white, make one dotted. Remember that although most journals allow the electronic version of the paper to be in colour for free, it has to be unambiguous in the black-and-white print version, and we can never afford to pay for colour in print. A continuous line can hide where you took actual data and imply that your trust some kind of interpolation and agree there is no aliasing. So do not do that. Show dots where your data points are and then use a line to join us the data points.

21. Use a referencing style of the type you see in journals. If the instructions to authors give you a method, stick to it. If not, use either numbers (preferably [1], or a subscript 1 if you insist) or Minnaert (1993), Neppiras and Nyborg (1959) or Leighton *et al.* (2004) for papers with 1, 2 or 3 authors respectively (note first names and initials should not be shown). Be consistent throughout the reference list, and be consistent when you cite a reference from the text. In the text, adjacent references, if using the numbered style, should be [1-4], not [1][2][3][4]. Each reference should have only one number unless you want to indicate different page sections in a book. References should not appear in the text out of their numerical order (i.e. [3] should not appear before the first appearance of [2]). The easiest carelessness for an examiner to spot is when a reference list fails to be consistent in where it places the year, the initials, and the use of brackets, full stops, commas etc. in listing reference. Use a referencing style that includes the paper title and the start and end pages. Give the initials for the authors (not their first name) exactly as stated in the paper… so in most papers I am 'T. G. Leighton' but in some I am just 'T. Leighton' (because my co-authors insisted on using just one initial), and you must write it exactly as the journal did (otherwise a person doing a web search from your list will have problems). List all authors for each paper in the reference list unless specifically instructed not to by the 'Instructions for Authors'. However in the body of the text, if a journal has more than 2 authors, name the first one only followed by '*et al.*' (noting use of italics and full stop to indicate an abbreviation), as shown above. Reference (in order of preference) journal papers, books (with page numbers), conference papers, reports, web pages. In general only reference a web page when you have to and avoid wikipedia. If you cite a web page give a link, because the rule with a reference list is that the reader should easily be able to find the source, if it is available (i.e. not a lost papyrus). When you get the thesis in final form, look through the reference list again… automatic referencing systems make you lazy, and I have seen a thesis submitted which had a complete reference list in every draft, except for the final submission when the student tweaked the format and deleted every year.

22. Don't take short cuts by referencing the PhD theses of previous students unless the material is there and nowhere else. Get the original refs they used, or papers that were written based on the thesis. Useful past references from the group can be found and downloaded from http://www.isvr.soton.ac.uk/STAFF/Pubs/pubs90.htm

23. Be very careful about taking material from web pages: formal peer reviewed articles should be used wherever possible. Ensure that you achieve the appropriate balance in your reference list, so that (for a PhD thesis) more than 90% of the references are formal journal papers in relation to the number of web pages cited. This can fall to 50% but no lower for undergraduate assignment essays.

24. Keep to a constant tense: there is a temptation to use the present tense when referring to papers, but it is usually best to refer to the past tense, since what a paper said when it was published is fixed, but a living author can change their mind. For example, "Joseph and Nelson [1984] found that the Spectrum ZX was the most powerful PC" is acceptable if the paper by Joseph and Nelson stated, in 1984, that the Spectrum ZX was the most powerful PC of the ones they tested. But it would be wrong to say "Joseph and Nelson [1994] find the Spectrum ZX was the most powerful PC" because those two authors have since changed their mind as better computers are today available.

25. If a reference is included in the main text in the form of '[19]' or '(Leighton, 1994)' then the sentence should make perfect sense if read aloud with that reference omitted. This does not apply if the sentence is constructed with the reference as part of the sentence (as in 'As detailed by Leighton (1994), the stiffness of the gas…'). Neither you nor your referencing software should place the reference at the end of the sentence after the full stop: the last thing in the sentence should always be a full stop, question mark… or exclamation mark (although I never want to see those).

26. In the body of the text, never write "is described in [Leighton, 1994]" where you should have written "is described by Leighton [1994]". Please do not write "is described by Leighton [Leighton, 1994]". Refer to people as people, and papers as papers – do not confuse the two.

27. Do not cite something just because it is convenient and you think it justifies your neglecting a difficult complication in your work. If it makes your life easier to state that 'X will not be a problem', then it is not good science to find an old reference [Y] that, interpreted one way for a very different set of experimental conditions, might allow you to take their conclusions out of context to justify your writing 'X will not be a problem [Y]'.

28. If ever you state that something remains constant, say what is changing as it remains constant. If ever you say that something is different, say what you are comparing it to.

29. Newspapers often run stories about how it is now acceptable to drop certain rules of grammar because words are entering into common usage. Do not believe this. You write an essay to gain credit from the reader, and if they do not agree with common usage, you will not gain points by telling them they are wrong. The following rules give some examples of grammar rules which are not acceptable to drop for items I mark.

30. It is now being claimed that we do not need to distinguish between ‘whom’ and ‘who’. This is equivalent to saying to you not need to distinguish between ‘she’ and ‘her’, or between ‘he and him’. Tarzan might say ‘Tarzan, him strong man’ but you know it is incorrect to do so. If you context is about ‘him/her’, then use ‘whom’. If the context is about ‘he/she’, then use ‘who’.

31. Do not split infinitives (i.e. place a word – usually an adverb – between ‘to’ and the infinitive verb). Some people do not mind them, but if your examiner is one of the people that objects to them, then if you split infinitives the examiner will be less in a mood to give you benefit of the doubt elsewhere.

32. If you write ‘due to’. (i) Read the sentence out loud with ‘caused by’ in place of ‘due to’. (ii) Then try reading it again using ‘as a result of’ = ‘because of’ = ‘owing to’ and use whichever fits. Both (i) and (ii) cannot be correct. Of course, ‘due to’ should never be at the end of a sentence, because you should never end a sentence with a preposition.

33. Do not use colloquial terms, and never use contractions like “doesn’t”. Furthermore, note also that [it's] is a contraction of [it is], and you meant to use [its] which means [belonging to it]. This is the exception to the general rule of introducing apostrophes when implying [belonging to].

34. Personal pronouns (such as I, we) can be used very occasionally (e.g. ‘We calculated the interval’) but usually it is far better to stick to the passive voice ‘The interval was calculated’). However be aware that many consecutive uses of the passive voice sounds odd.

35. Both of the preceding points illustrate the fact that the language I use in a lecture or video, is fine for that, but you need far more formal language in a scientific write-up. The same goes for the similes I use in lectures, where I paint word pictures by talking about the ocean as a ‘giant piano’ etc., but you must not do so in your formal write-up.

36. Know the difference between commonly confused terms like ‘effect’ (noun) and ‘affect’ (verb); and between ‘practise’ and ‘practice’. For example, the word “dependent” is an adjective. It describes a noun that relies on, or is controlled by, another noun. The word “dependant” is the noun, and it means an object (usually a person) used who is dependent on some other noun. The word ‘data’ is always plural, but the word ‘dataset’ is always singular.

37. If you are in doubt as to whether a word in a sentence should be ‘which’ or ‘that’, and both seem equally usable to you, then use ‘which’ if it is preceded by a comma, and use ‘that’ if it is not.

38. Photographs need scale bars. If you can, place a ruler next to the object you are photographing. If you do not have this in the image, explain in the caption the size of a clear feature, or the width of the image frame. Ensure multiple panels are labelled [(a), (b), (c)] and if they come from a movie, state the time stamp corresponding to each frame in the caption.

39. An examiner will never trust an assertion by a student, so back up all your assertions by either citing prior literature, or referring specifically to the figure and section number of your thesis that gives the evidence and outlines the argument in detail. Do not say ‘as shown later/earlier’ – give the specific section number. Furthermore, if there is not space to explain something that your reader will not be

familiar with, then you should add a reference to where they can find further reading on that topic. Never leave your reader with nowhere to go to find further information for something they might not reasonably be expected to know.

40. Words like ‘might’, ‘may’ and ‘could’ are usually warning signs to an examiner. It means that the student observed something unexpected, thought of the first candidate subject that came into their head, and attributes the effect to that (like a court locking up the first suspect the policeman thinks of). If you come up with a possible explanation, test it, first by putting the numbers in to check your theory might cause a shift in the observed direction and of roughly the right size, and then test it by experiment.

41. Be very sparing of your use of metaphors, especially when you feel the need to put them in in quotation marks. It suggests you have heard a description, do not really understand it to express it in precise and accurate terms, so you hope to hide this from the reader by using metaphors because the reader will assume you understand it so well, and think the concept so easily grasped that they will too, that no-one will question whether you understand it or not. Use of analogy or metaphor before (or worse, without) explanation will be interpreted as you highlighting that you are incapable of understanding a phenomenon.

42. Plagiarism will put you in line for a fail, and rightly so. Plagiarists usually quote someone else who has reviewed several sources, pretending they reviewed these sources: you should read the original sources and come to your own conclusions, and add a reference to the review that led you to those sources, explaining that it did. Sometimes you find someone’s else’s words so perfect or authoritative that you want to convey that to the reader, so explain that you are quoting someone (e.g. by writing ‘Quoting Smith (1999)…’) and then place the quoted passage in quotation marks, and if it is more than a couple of lines, set it in its own paragraph, inset from the margins, perhaps using italics, to clearly show that it is a quote. Perhaps the most justifiable copying is when you wish to copy out someone else’s derivation (a string of related equations) to the reader, for example to make clear the underlying physical assumptions hidden in the maths. If so, state at the outset ‘Following the derivation of Smith (1999)…’

43. Don't put label or jargon words in quotes without definition what the label or jargon means, or explaining how it precisely fits the current context. Quotation marks are frequently mis-used by students when they cannot think of the right word or explain a concept, but want the examiner to find the right meaning and think the student knew it all along.

44. Be consistent in style used for headings, equations, Tables, and figure captions. In general avoid underlining except for web pages. Use bold, capitals, italics, and font size only to distinguish heading types. All the text other than the above should use the same style (font, size, line spacings, justification, paragraph indent etc.). Be consistent on whether you justify margins, leaving spaces between paragraphs, and other formatting issues, such as whether you indent at the start of paragraphs (some consistent variation is allowed, such as not indenting the first paragraph of every section, but indenting all subsequent paragraphs in that section).

45. Hate your own theories. Do everything you can to show them to be wrong. Scientists have a tendency to love their theories and be protective of them, which is completely the wrong attitude. You want to be the person to disprove them, because you look like a poor scientist if you publish a theory as if you believe it, and someone else disproves it.

46. The order of your sections and subsections should be Introduction, Materials and methods, Results, Discussion, Conclusions, (with then a Future Work section for a PhD thesis but combine that in with the Conclusions for papers), with subdivisions if you have simulations, lab and field trials…and having set that up, keep the right material to the right section (do not present discussion in the Results section, except for rare exceptions, such as example results in the Methods section to illustrate the apparatus).

47. Even if you don't use it at the end, every draft chapter should start with an abstract.

48. Never rely on your section title to supply meaning. The text in the section should work without the title. Therefore never start a section with 'This' (as in 'This topic, this phenomenon, this effect')) because you are relying on the subtitle to give the sentence meaning.

49. Write so that someone 50 years from now could try to replicate your experiment. How important is that? Ask yourself, what are we looking for in examining your thesis? Evidence that you can master the experimental/numerical method to get new data… Evidence that you test new and important scenarios… Evidence that you can collect and interpret the data without mistakes…all of these, but also evidence that you can concisely write up all your work in a way such that it tells a clear story, and does so in such a way that someone who gets your report 50 years from now, with no other info, can replicate your experiments and compare their numbers meaningfully with yours (and I wrote 'compare your numbers' for a reason .... if the numbers on your graph axis or greyscale are not SI units, there is a good chance they cannot unit you are hugely self-critical in explain how those numbers were calculated). For this reason, examining how clearly you write is as least as important as looking at your results.

50. There will come a point when you have revised your thesis so many times that you just want it over with, but I am saying you have not got it into fit state for submission. You will be tempted just to go ahead and submit, to get it off your desk, without doing what I ask. That is your choice. But if you do that, your supervisor can no longer help you. From the moment you submit, the supervisor cannot take a role. What happens after submission is up to your internal and external examiner. If the external is annoyed by something, even as cosmetic as poor English, and says a rewrite is necessary, you cannot amend the thesis and send him/her another copy. You are examined on the version you submit first time around, and your supervisor cannot help you any more. This is not like submitting a 'best I can do in the time' version and hoping the Examiners will sort out any further changes. So think carefully about submitting when your supervisor says the thesis needs further work.

51. Read the final pdf and make sure equations do not convert into squares etc and captions do not tip over the page.

52. The examiners independently mark the thesis without knowing any opinions from the other examiner or the supervisor. This influences them hugely before the viva. This means you must treat your PhD as if you are being judged on the thesis alone. The thesis does not care that you must submit by a certain date in order to be able to tell a job interview panel that you have submitted… or to overcome visa problems, or because you are tired of working on it and just wanted to have it over with. There is no excuse that will cover any failing in a thesis. Nobody will want to hear that your equipment was broken, that you had a computer crash and lost a

chapter. Overcoming such as these to produce a good thesis is an expected skill for a PhD. Above all, the examiners will not want to hear that the thesis could have been better if you had delayed submitting it, but you had to submit by a certain date in order to apply for a job, or take a holiday you had paid for, or propose to a sweetheart. None of that counts. The examiners will be furious if you passed errors on to them to find, if you make them proof read your thesis or correct errors in grammar. Similarly, it is not your supervisor's job to correct your spelling and grammar. If you need to, pay someone else to do that. Even if your supervisor is kind and will do it for you, it will mean that it will take them 6 months instead of 3 weeks to get your thesis back to you.

53. There are two peculiarities of the UK system that are important to UK students. The first is that, within 3 months of the date of you getting the letter of acceptance of a paper, you need to lodge a 'green' open access version of that paper in the institutional repository. Note that this is from date of acceptance, not date of publication. You can choose 'gold' open access instead of 'green' but it will usually be expensive.

54. The second of the two peculiarities of the UK system, is the requirement to archive raw data. This is in fact a very helpful thing in science and should be recommended for all scientific authors when publishing. For UK students, when you write a paper from your thesis, you will need all the raw data, and in a form that can be read by others, loaded in the University Repository (e.g. PURE) – do NOT ask for this to be done (and DO NOT do it yourself) until the paper is accepted, in case the paper is rejected. When you write the paper, include in your acknowledgements that 'Data for this paper is lodged in the University of [name university] Institutional Data Repository at http…'. When you receive the proofs of the paper, replace the http with the actual web page provided for you by the repository administrators (usually the university library). Contact the repository administrators when the paper is accepted and ask for a doi and help loading up data. To see an example, go to https://eprints.soton.ac.uk/399196/, where we uploaded tables of data in uniformly readable text format, wav files etc. for the paper at http://asa.scitation.org/doi/abs/10.1121/1.4960785?journalCode=jas. We referenced the location of the data from the acknowledgements section.

55. Finally, when you write "source and receiver", do not place hyphens between 'source' and 'and' and 'and' and 'receiver'.