

Chapter 10

Write now! Harold Thimbleby

It is a delicious thing, to write, whether well or badly — to no longer be yourself.

Gustave Flaubert

Cite as: H. Thimbleby, “Write Now!” *Research Methods for Human-Computer Interaction*, pp196–211, edited by P. Cairns and A. Cox, Cambridge University Press, 2008.

10.1 Introduction

Writing is hard, and it is easy to postpone doing it. There seem to be many natural reasons to postpone writing, like you don’t know what to write yet so you can’t start. Our natural inclinations, however, are counter-productive. This chapter provides many reasons to start writing now. Writing now will improve your self-esteem, it will help you write better, and it will help you do the work you are writing about — there are many other benefits this chapter covers. In short, writing is formative; it is the most important activity of your project, and is integral to it, not just a description of what you did. This chapter does not tell you everything you need to know about writing, but it tells you the most important secret: write now.

The advice in this chapter is written concretely as if for helping people write project reports (undergraduate, Masters or PhD theses). But the arguments apply equally to writing research proposals, job applications, stories, books, or research papers.

10.2 Writing (noun) and writing (verb)

Writing (noun) was invented around six thousand years ago by the Sumerians. Today, we take writing for granted, yet in truth writing has a magic effect on us. Little marks, on a screen, on paper, on a road sign, anywhere, convey information — thoughts and emotions — from the writer to the readers. If you read a novel, your mind enters another world. Socrates is reputed to have said that writing would destroy memory. Yet we only know this because his student Plato wrote it down for us to read today. Without writing we would have forgotten.

All of us do a lot more reading than writing, and most writing we see just “sits there,” written by somebody else. It looks like passive stuff that just is. Thus, what you are reading right now is not going to change; it has no life of its own, it seems. You can skip to the end of this chapter,

to see how I finish, and then you can come back. This sentence will still be here, unaffected by events around it.

Most writing (verb) we've done in our lives we did because we had to do it. Your teachers told you to write essays, and you did. Your teachers told you to fill in a lab book, and you did. You wrote; you got marks. If you weren't asked to write something, you almost certainly didn't. Soon, you only wrote because you had to — and you only wrote just in time for the hand-in deadline. In short, you've been well-trained by a lifetime of experience to write only for marks, and only to write when asked to. If you've come out well in this training process, now you only write when you have to, to get some marks or to pass a course.

Ironically, then, having a lifetime of successful education behind you has become a recipe for passivity, and for missing some important things about writing.

A good piece of advice about writing is to read. If you read good books and good papers, especially ones you enjoy (even fiction) you will learn — if you reflect on it — a lot about how to write well, how to engage your reader. Why is this book gripping? How has the author structured it? What do you want to do that this author talks about, but this author puts you to sleep over? These are good questions, but unfortunately they can be misleading: the more we read, the more we come to see written text as just “being there” as if by magic. Written text is static; it just “is” — and it is a short step to believing that the author “just wrote it.”

Almost certainly, anything good you read was written through a long process of writing, revising, and redoing everything. Probably as the author planned and wrote their story, they changed their story. Their writing changed what they were thinking, and their changed thinking resulted in a different, better, story. That final story is what you are reading, but all the work that led to the final result is hidden. Because we can't see that prewriting and rewriting work, it makes it seem even harder to write well, because we don't know how to begin to get that quality or quantity of writing done in our own work.

10.3 Writing a project into existence

Writing can bring benefits that, because you may already have bad writing habits, you are probably unaware of. These benefits include understanding your work better, understanding the tools you'll use to write and also the general benefit that comes simply from practice and having the time to practice.

To be concrete, let's say you are doing a project that must be written up and handed in to be marked in June. Today, let's suppose, it is February. You have four months to go. Obviously you are going to do your project then you will write it up. But your current rate of writing is zero pages per day. The word “project” might mean anything from a small piece of coursework to a major grant proposal, or even a lifetime's work — your magnum opus you hope to get published as a book.

If we take the June deadline seriously, a simple calculation, based on the evidence to date (that is, you are writing zero pages per day), shows you should have started to write already, else you cannot possibly finish in time! Maybe you will ask for an extension when you get to June?

Of course, that's a joke, you are going to spend February, March and April working, then May writing up. What happens, then, if in May you find yourself writing something like: “The experiments done on hot days got different results. There were ?? sunny days over the course of the experiments, thus accounting for the unexpected result.”

Well, now we are in May, it's too late to find out what ?? is supposed to be. You could probably get away with ignoring the number altogether, basically by rewriting the sentence to

conceal your ignorance. But that's only an option if you are lucky. Indeed, it isn't likely that your experiment will be clouded over by not knowing how sunny it is. The point is that you don't know what you want to say until you try saying it. Which means that you don't know how to run your experiment until you write it up. If you had tried writing that sentence before you did your experiments, you'd have anticipated that counting sunny days might be useful. Then, in June, you could put in the right number for *??*. Now the best you can do is look up the weather reports and make a guess.

This is a trivial illustration but it has a general lesson: start writing your project now even before you've done the work. Then you'll know what to find out so you can write it up.

Many people will be working on their project, planning to write it up in time for June. People normally want to finish their lab work before writing up. They might well do work or experiments that don't need writing up. What happens when you are writing up and you find all the results from March are a mess. You aren't going to mention them in the write up. So why did you waste all of March doing that work? Looking at it the other way around: if you'd written your report first, it wouldn't have mentioned your wasted work from March, and you would have known you needn't do it. You could have done something else. Or you could have finished your project a month early. Or you could have done a better project.

So, start writing your project now even before you've done the work. Then you'll know what not to do so you needn't waste time on things you'll never write up.

If your project revolves around programming or software development, there is a very important synergy you can exploit. You can start writing now imaginatively, imagining how your software should be when it is finished. You can then change your program to make what you wrote become true. If you were doing an ordinary project, like collecting some data about rats, you are unlikely to be able to get the rats to change their behaviour to suit your imagination. But programming is more fun than experimenting with rats (in my opinion), because by programming you can create the stories you want to tell. That is deeply satisfying, when it works, and to work you only need to know what stories you want to tell! In fact, writing about programs (especially user manuals) often gives you strong clues on what to improve in your programming to make it better. If you find yourself writing a manual entry for your program that warns, "You can't enter more than 100 characters" or similar (perhaps not so blatant!) surely this is a good clue that you could modify your program so the warning was not necessary? In this case, why have a limit at all? Again, that's a simple illustration, supporting an important rule: write now, maybe just sketches of your final work, so that you can see where to direct your work.

Most projects are quite big, and are probably amongst the longest documents you've ever written. Did you know that your word processor (probably) has an outliner, which will help you write a long document more easily? And if it doesn't have an outliner, why not use one that does? Did you know that there are tools to help organise bibliographies, and that you'll need them if you have more than a few references? Or you can generate tables of contents, indexes, cross-references, tables of figures, and many other things automatically - and hence easily get them right? If you are lucky, you will discover all this when you are writing up in May.

If you start your write up now, you could find out whether you can print it. It sounds obvious, but guess what will happen if you write your project up during May, and you get round to printing it for the first time on May 31. You will find your printer doesn't work, has run out of ink, or you need a password for it. If you start writing now, you can test out every part of doing your project well before you need to rely on every part working. When you really need to rely on a computer, the only thing you can rely on is that you can't rely on it.

Why not start writing up now, so that you learn how to use the writing tools you've got? Why not discover now, while you have months to go, how you are going to have to struggle with

the tools. You might find that you want to include some nice pictures in your project. Are they in the right format? How do you keep captions and figures together? If the project involves a computer, you should be able to generate stuff, and as much as you want. Every picture, figure or table you generate from your program is another half page or more you don't need to write; it'll be well worth finding out how to do it reliably. In particular, if you develop a system (or find one that exists already) for generating and including pictures, you will be able to improve your project and then automatically get improved pictures (or tables or what-have-you) in the write up.

You may even discover things about your writing tools you didn't even know were there to discover. You'll have time to learn these things but won't be under pressure and hence make mistakes.

If you were a musician preparing for a performance in June, you'd start practicing, so that you got better and better. You'd practise even if there was nobody to listen to you. You'd practise because you want to get better, and because (as you start to get better) you actually enjoy playing. The same goes for writing. Write even if nobody else is going to read it; don't write only when you have to — that's a recipe to not enjoy your writing. If you don't enjoy writing, you won't write so well, and you enjoy it even less. The one way out of this vicious circle is to start writing as if you could enjoy it. . .

Why not start writing now, so you get better and better with practice? Each time you sit down with your writing you don't just add a bit, you can read it and improve it. If you read something a month after you wrote it, you'll have forgotten what you meant but you can see clearly what you said, and it's probably not half as clear as you thought it was when you wrote it last month! Now's a good time to clarify what you said. If you are going to write well, it means you need time to read it next month. If you read it next month, you have got to finish it a month earlier.

So, start writing your project now even before you've done the work. Then you'll have plenty of time to read what you've written. You'll be reading it more like all its other readers when you can't remember what you were thinking originally. So you'll have lots of ideas to improve your writing.

All of these arguments show that writing is alive. It's dynamic. It changes what you do. Put formally, writing is formative.

10.4 Talking to yourself

When you are writing you are not just communicating things done to other people. You can communicate to yourself. You can tell yourself ideas, and you can think through those ideas yourself, just as you can think through my ideas when you read my writing. Do you agree with me? Do you agree with yourself? You usually agree with yourself — actually, you usually agree with yourself because you never thought of having an argument with yourself. Like Socrates feared, you've forgotten what you were thinking, so you think what you were thinking was just fine. But if you've made a mistake or been sloppy, hopefully you won't agree with yourself. You'll want to change what you said. In fact, you will only know how to improve your thinking if you write it down. Thinking that needs improving is often not clear to start with, and it's very hard to know your thinking is not clear if you're just thinking. If you're just thinking, your thoughts are wrapped up in themselves, and it is almost impossible to spot errors and weaknesses, because the thoughts themselves are erroneous and weak. You need to step out of yourself — write your thoughts down, and read them critically later.

So, again, start writing your project now even before you've done the work. You'll improve your thinking. If you start writing now, well before you've started "real" work, you'll improve your planning too. Even today, you can write down your project title, your name, the beginnings of a table of contents, and a few chapter headings. Introduction. Literature review. Conclusions. Future Work. References. Maybe an abstract? Acknowledgements? Pictures, certainly.

If my project has a literature review in it, maybe I should go and find some literature to review? If my project has pictures, maybe I should go and find a camera? Already, you can see how starting to write starts to define what is worth doing. Conversely, there are some things you are doing that you are never going to write about, so why are you wasting time doing them if nobody will ever know?

10.5 Nibbling

If you start this sketchy write up now, you will have a framework you can extend any day you feel like it. You can nibble.

Nibbling is the way to get any big job done. If it's a huge job, this is inevitable; you'll need meals and sleep between nibbles! If it is an average sort of project write up, nibbling has the advantage you can nibble when you feel like it. When you are energetic and efficient. When you are a good writer. You can even write when you are mediocre; you can write when you force yourself! If you don't nibble, many people put off writing until they think they can write perfectly, which of course they never can. Instead, nibble, and once you've started it will be easier to improve it than if you never start.

If you leave writing up till June, you will have to write, whether you like it or not. Mostly, it will be a chore if you have to do it, particularly if you have to do it under pressure of a deadline. You won't be able to party; you'll have to write.

Instead, you could have started now and nibbled when you felt like it. Partied when you felt like it. You would have enjoyed writing what you wrote, because you chose to write it when you felt like writing. You were nibbling, and you were happy because nibbling started soon enough is a fine way to write anything, however big. A happy writer writes happy things. It sounds obvious, but if you write boring dull stuff that you have to write, who ever reads it is going to find it, well, boring dull stuff too. You will get more marks for writing something your examiners enjoy reading. It's better than that, because if you enjoy writing it, you'll enjoy putting more time into it, and you will write it even better.

Nibbling is an attitude (if you believe in it) that will help you if you have "writer's block" or low self-esteem about your writing. Today there is something you can write in your project. For example, your project will need a Acknowledgements section. Why not write a thank you to the friends who have helped you? Writing this small section, making a small contribution to your thesis, may be so different from writing the rest of it, that it is enjoyable. Or at least you can see you will have got it completely written in the next half hour. You've done something useful. You've made progress. And the rest of the writing work you have to do is being nibbled away at.

10.6 Writing techniques

Word processors, and outliners, bring a great freedom that writers could never achieve before they were invented. You can write in any order. You can rearrange your writing any time you like. Outliners let you get an overview, and edit the overview without getting distracted by detail. Often, it is easier to write in an order that best suits how you think; clearly, you cannot write

down ideas until they occur to you! Once written, though, you are free to reorder your writing to suit the arguments and narrative you now see you are constructing, and that's most easily done in an outliner. Words differently arranged have a different meaning, writes Blaise Pascal, and meanings differently arranged have a different effect. With an outliner, you can explore different effects, and find effects you wouldn't have found without the flexibility.

Another advantage of writing as soon as possible is that you will gradually learn how to use tools like the outliner when, in many ways, mistakes won't matter. You can experiment, and even have accidents. You will learn a lot about your editing tools, and as you get further into your project you will begin to use them more professionally to improve the quality of your writing. In the final stages of writing, you do not want any writing tools to be hindrances; you want to know these complex and powerful tools very well. And that means practice.

A useful thing to do with an outliner especially if you are co-authoring your writing is to have a section called **Junk**, where you move writing you don't yet have the heart to delete. I find a **Junk** section useful for my pedantry. Thus, my original opening of this chapter stated that Sumerian writing is not the oldest writing as everybody assumes but merely the oldest we know about. Hardly a point that would improve the impact of the first few sentences. While I felt obliged to write it at the time, in the name of integrity, the point is so distracting from what I really wanted to say, I first moved it to **Junk** (that's easy), then once I had seen that it wasn't helping the story, I deleted it. Emotionally, it's far easier this way. Just deleting outright something that you think is cute is very hard to do. It took you effort to write the text the first time, and you will be proud of it! It will take less will power to move it to **Junk** than to delete it.

If you are co-authoring with somebody else, this is another good reason to move text to **Junk**, because it will upset them less than deleting it. Furthermore, their text that wasn't strong enough to keep (and therefore should have been deleted) might have been the beginnings of a good idea, which your co-author hasn't expressed very well as yet. If you delete it now, your co-author might forget all about the idea. If you move it to **Junk**, you are telling your co-author: "this might be worth keeping if you rewrite it, but I don't like it as it currently is. Please, either delete it, or make it stronger."

Instead of a section called **Junk**, I often find that using footnotes and appendices is easier. Some word processors have a "track changes" feature. On the whole, I think these only work at the very last stages of writing: they do not cope very well with rewriting paragraphs. In Latex you can define macros to hide stuff into, or put as margin paragraphs or footnotes, as you and your co-authors prefer.

If you do start using footnotes and appendices seriously as a technique to help write better, remember to review whether you still want these footnotes in the final document. Generally, a document with lots of footnotes and appendices is probably trying to say delete some of this stuff that isn't of prime importance! If it isn't worth saying directly in the final document, why leave it in?

Some material becomes "junk" because you change your mind about what your project is doing. Now, instead of deleting the junk text, you could consider moving it to your section Future Work. In the **Future Work** section of your project, you write about what you didn't do, but what you think is still worth doing in principle. So the text you wrote ages ago about what you thought you were going to do in the project can be moved into text about what somebody else could do, to carry on from where your project leaves off.

If you think this chapter is long, thank me for the text and ideas I have already deleted! A very good piece of advice (I don't know who said it) is that if you have any doubt at all in your own mind whether or not a bit of text, a chapter, paragraph or phrase, should be deleted, you should delete it. Your readers will be harsher critics than you. What you notice as redeemable

thoughts, to them is certain rubbish. Delete!

Getting feedback is crucial to good writing — effectively it is user-testing your work. It can be very quick and easy to get feedback from your friends, your colleagues and your supervisor. Use them. There are five basic rules, worth keeping in mind about getting feedback:

1. Feedback is very useful, most especially when you don't like it.
2. You won't get feedback without doing some work; for example, you need to give people printouts of your chapters. Possibly with an encouraging cup of coffee.
3. Just because some people don't give you feedback, don't give up — especially when your supervisor doesn't give you feedback.
4. Different people have different styles of giving feedback; find out what they are, and exploit them. For example, some supervisors want to read your complete project to see it as a whole; others would rather have a chapter at a time. If you get your strategy wrong, you won't get feedback — and if you are sensitive, you'll probably start worrying whether what you wrote was even *worth* giving feedback on and your self-esteem will take a dive. What's happening is you're managing your feedback process wrongly; so fix it.
5. Tell the people who you've asked for feedback what sort of feedback you want. Do you want help with spellign? Do you want some high-level feedback, like encouragement? Do you want to know some short-cuts to finishing as quickly as possible, or do you want to make your project the best possible write up ever?

If you are doing a big project, like a PhD or writing a book, a big project that takes a good few years to do, you have more time to write. The biggest danger of a big writing project is that it seems to make no difference whether you start writing today or tomorrow. There's so much time! So it seems you may as well start tomorrow or next week. That can't be true forever, since sometime you will have to start writing something. There is a more insidious problem: if you put off writing today, even for the best of reasons, you are starting to train yourself not to write. The bigger the project, the easier it is to delay, and the longer you delay writing the more certainly you will have trained yourself into a habit of not writing. The only way out is to start writing today, to force yourself to overcome the temptation that you could procrastinate with little damage.

The second biggest danger of a big project is that there are more opportunities for it to go wrong. Working over a longer time, your computer is more likely to crash — and take with it more work than it would have done otherwise! Make sure you backup regularly, for instance onto a CD or something else that isn't going to get messed up, and occasionally check that you can read your backup. There's nothing worse than discovering your last backup itself is corrupted and useless, just when you need it most!

10.7 Killing two birds with one stone

With a big project, if you start writing now, some of your draft writing might be easy to turn into papers that you can publish. You can write a paper for a conference or journal. You may well find writing a paper for a conference helps in many ways: you get excited about the achievement and buzz of publishing; you can get that buzz writing something short; and when you hand in your thesis or project report you will be able to say somewhere prominent “Chapter 4 was published at such-and-such conference” (so the examiners had better give lots of marks if it was good enough for that conference!)

Naturally, writing a paper for a conference will in itself define some of the work you need to do to support the writing for the paper — it's just a mini-project, and all the rules apply. It's exciting writing for conferences. Some people like the deadlines; it gets them writing. Some people like the buzz of the conference and being there. If you get a paper published, not only have you got a bit of writing that can go in your project, you've also got a piece of important evidence: your work is worth publishing. You'll get more marks, and be far more likely to pass the final exam.

One benefit you can plan to have is that writing a paper will give you more practice writing. It will help clarify your research ideas. It will help express them concisely, without all the history and confusion of your big project report. A paper has to be brief and to the point. Being brief makes it easier: there's less to do. Being to the point means you need to work out what your point is.

When you send off a paper to a conference or journal, it will get refereed. Your referees will give you lots of good feedback. Sometimes, though, your paper will be rejected and you think your referees were idiots! They missed the point! Three points: First, your referees are representatives of your readers, so if they missed the point, maybe anybody else would have done. It's your responsibility to write more clearly. Secondly, you learn, you send off another version to another conference. It's not the end of the world! Thirdly, unlike your friends and supervisor giving you feedback, the referees may not feel obliged to be nice to you which can make their criticism a more honest reaction. This may also make it harder to bear but if you can bear it, you could get more insight out of it. Moreover, if the feedback is good, you can feel confident that the referee really did think it was good — they have no reason to be “just saying that.”

Another benefit of writing a paper is that you could co-author it. Most likely, your project or thesis has to be written entirely by yourself, which is boring. But co-authoring means two or more people can get together and hammer out ideas and have even more fun, and write something that is even more polished. When you are bored writing, get your co-author to nibble, and vice versa. Only make sure you don't both nibble at the same time (unless you are in the same room or using a decent multi-authoring tool)!

10.8 Self-esteem

Your main enemy to writing may well be self-esteem.

Writing is very personal, and expressing yourself raises all sorts of anxieties. Is what I am writing going to be good enough? Might I be ridiculed for saying that?

Because low self-esteem makes it harder to start writing, you will find yourself putting off writing. When the deadline really looms over you and you know you must start writing, you've now probably given yourself an impossible task. You delayed because you lacked self-confidence, and now you haven't a chance of writing well because there is too much to do and not enough time. If you end up with a piece of bad writing, your already low self-esteem will seem confirmed. Your self-esteem will plummet. It's a terrible vicious cycle.

Realising that low self-esteem feeds on itself may be some help to you; other helps are to draw other people into your writing, to get encouragement from them. In fact, if you start writing early and simply you can show people drafts before you get anxious - and with the nice excuse that any weaknesses in your writing can be laid at the door of starting early, you followed my advice even, and obviously you don't yet know what you are writing about! It's all Thimbleby's fault! Your self-esteem will recover if you blame me rather than yourself.

You may be worried what other people (particular your supervisor) will think of your writing.

The obvious thing to do is to work harder, polish what you are writing and to try hard to make it perfect. This obvious response couldn't be more wrong. The more you try to polish your work, the harder it will be to show it to anyone. They might criticise what you thought was perfect. If they want you to make major revisions, you'd be devastated. Instead, write a little, show it to your supervisors or friends and ask for feedback and help. If you give it to them knowing it isn't finished, you'll be happier with any feedback; and they will be able to give you more useful feedback, too.

Other people can be bad for your self-esteem and motivation. Ironically, the people you see most of are (with rare exceptions) not actually writing when you see them, so you will tend to believe that they achieve whatever success they have by putting little effort into their writing. It does not help to compare what you see them doing with what you know you try to do. In particular, if you work in a laboratory with other students, say PhD students who started ages ago and seem mature, the students you see most of and who seem the most experienced are ironically the ones who haven't finished writing their thesis! The longer a student takes, the more you will see of them. Efficient students, on the other hand, who get on and write their thesis efficiently, finish on time, and disappear. The students who are around, then, are mostly the ones who are writing slowly, if at all. Statistically, familiar people are not examples to follow nor to set your personal standards by.

Inevitably, a consequence of writing and writing by nibbling is that some of your writing will be "wasted." You might write something today next week you'll want to delete. You mustn't take deleting stuff personally. Deleting writing is no different to a musician practicing a piece and nobody else hearing it. The unheard sound of music is lost; the deleted writing is lost. But both the musician and you got better for the practicing.

10.9 Scaffolding

Since writing material that later needs deleting is part of the process of good writing, it's useful to give it a name, not least so you can feel positive about deleting stuff you put so much effort into! Writing that helps you write, but which is not needed in the final document I call *scaffolding*. You can't erect a decent building without putting a lot of care into scaffolding, but you take it all away before you hand over the building to its users. So, review your writing and look for scaffolding: stuff you needed to write at the time, but is it helping your readers? And then delete it, or squirrel it away in another file for another document. Pascal once apologised, "This letter is very long only because I didn't have the leisure to make it shorter." Even for him, then, good writing meant putting scaffolding up, because you need to say things and get them off your chest, then deleting and editing them, because you want to communicate.¹

Often, I find, what I want to say first is not what I really want to say, but until I've started writing and got some ideas off my chest and out of the way, the key new thoughts won't surface. And, it's good to write down familiar things, it gets your writing up to speed, speeding up with the easy bits — like the project outline — and then being on the ball when the harder work starts.

¹Actually, Pascal's Letter XVI of his Provincial Letters, where he makes this point, is rhetorical, so here he is saying something contrived in order to make the lengthy fictitious letter sound more plausible. In 1660 Louis XIV ordered Provincial Letters banned and burned: the letters were not just irritating, but were so well written they attracted too much attention for the king's liking.

The popular film *The League of Extraordinary Gentlemen* is typical of making a virtue of the necessity of deleting scaffolding material: the DVD box boasts that you can watch 12 deleted scenes!

Should this footnote be deleted? Doesn't the detail distract from my arguments?

10.10 The best is the enemy of the good

Though nibbling is a good way of starting, it can become a problem in the long run: how do you know when to stop? Nibbling makes it seem you can always add a bit more (in fact, that's the point of nibbling as a writing strategy).

Ironically, following my advice to write has got you into a lifetime's habit of writing, but it may have also developed in you a habit of writing far too long, and not letting go. You have got yourself into the habit of continually improving what you write, and improvements are always possible. While it's true you can always improve, it's worth remembering that at some stage your readers are not going to notice when you make what you think is an "improvement." At some stage, after lots of work on your writing, your writing will be good enough, and spending more time on it will merely delay its completion.

The pithy way of putting this is Voltaire's pithy comment: the best is the enemy of the good - which means that trying to write perfectly, you may never write well. If you are always improving, you will never finish. Too many people want to have the perfect idea before they write it up. They think, rightly, that writing will make the idea better. It's a short step from this to wanting your writing to be perfect before your show it to anyone else, or hand it in, or hand it over to a publisher, or send it off to a conference or journal. The longer you perfect your writing, the more pride you will have, and the harder it will be to get it finished or to get really helpful comments from friends or colleagues.

(I thought about deleting the next paragraph, but by leaving it in, you can see a paragraph I wrote that ought to have been deleted. Fortunately, you can't see the many other paragraphs I really deleted!)

~~—It's far better to give somebody a draft and ask for their comments now. Both you and they know a draft needs improving, so you'll get useful feedback. Give them a highly polished piece of writing (if you ever finish!) and they won't know how to avoid upsetting you, and you won't know how to deal with even the slightest criticism. In short, take breaks in your writing and let somebody read it as soon as possible.~~

10.11 Other advice on writing

A great deal has been written about writing. A lot of it is very sensible advice, particularly about reading and learning from material you admire. (Do you know what writing you admire? Why do you admire it?) You can read a lot from different genres, too. A good novel envelops you in another world, and is hard to put down. How does the author achieve that? Wouldn't it be nice to write project reports that examiners found so gripping?

Almost all of this very sensible advice is about the facts and knowledge you need to write well. Some advice you can get, however, is mad: like, if you want to write clearly, you should know what you want to say. No! Rather, you should work out what your readers would like to hear. You can work out what your readers want by being a reader yourself: work it out through writing, and deleting some of what you thought you wanted to say. In particular, if your readers are people who are going to mark your writing, what do they want to hear? How can you play the game to get more marks? Have you read all the instructions? Do you know the criteria you will be marked against?

Unfortunately, to write in a way that your readers regard highly, or mark highly, is also a slippery route to moral stagnation. The most popular newspapers are probably the least useful in improving the world, precisely because they write what their readers want to hear. However, if you don't write well, and your readers don't like reading your writing style, you will never change

the world. You must know what your readers want and like, just as you should know what you want and like, but you do not need to pander to any of it.

10.12 Writing style

When you write you have to choose how to express yourself, and how to communicate to your readers. These goals are often in conflict; for example, you may feel like screaming at an wrong-doer, but the legal expressions of a lawyer may be more effective — though it all depends! That’s an extreme example, but it makes the point. Indeed, it takes a very long time to learn to write effectively as a lawyer.

Typically in writing you have a particular audience, who have expectations. If you are writing a project, there may be advice provided on writing style; if so, you should know it, and follow it. It may be important that your references follow APA (American Psychology Association) style, or Harvard, or Chicago. Here, it is easy to get more marks by merely knowing the rules. Similarly, when submitting a paper to a conference, you want “more marks”; irritating referees on your bad style will be counter-productive.

Editing references to follow a style is a relatively light task, and you can do it and double-check your references at the same time. Or you could use a tool like Bibtex, and leave the style of references up to a program. However, changing the style of your whole project can be very tedious. It’s best to think about style early on, and it may be worth trying a few styles out consciously to see how effective they are for you.

One of the most common problems is the voice of the writing. Do you use the first person in the active mood, “I wrote the program”? Do you use the third person in passive, “The program was written”? How do you refer to other people, such as experimental subjects and users? “The user pressed a button, and then they pressed another...”? You can certainly avoid choosing between he/she/they by circumlocution, but your writing can become more tedious to read.

Some people think you can be more objective, more scientific, if you write impersonally — which means third person passive. They think it is subjective to write in the first person. My view is that it depends, though too many people insist without thinking that you have to write science in the passive. In fact (in my opinion), to admit that you did things is scientifically more honest than to pretend things just happened, which is what the passive literally implies. If “a test tube was heated” did you do this, did a technician, did an electric heater, or what?

You should take responsibility. On the other hand, if you are writing formal material (such as law, maths or philosophy) the argument in the writing should stand on its own feet, and the passive is then more appropriate. An argument is no stronger or weaker simply because *you* made it. But an experiment might get a certain result (or ignore a certain outcome) because *you* did it.

You will notice that throughout this chapter, I have referred to the writer as you. Obviously, if you are reading this, you want to write. Other authors (that is, people other than me) might have written “one” (as in, “When one writes references, the required style should be used.” Some writers like to be completely impersonal, as in “The references should be written in APA style.”

Personally, I prefer my style; if I had used the words “author” or “writer” too often, you would have got confused. Are you the author or am I? Actually, we both are. For a chapter about writing, then, it would take a pedantic style to make clear who’s who, except by using the first person (me) and second person (you).

As the goal of this chapter is to encourage you and make you enthusiastic about writing, I have not adopted a “scientific” tone. This chapter has a voice and a tone suitable to the goals

of the chapter. Likewise you must find the right voice and tone to communicate the goals of whatever you write.

In short, there is no agreement on how to write well. My advice therefore has five levels:

1. If there are any writing rules provided, follow them. If there are no explicit rules, read examples of what has been successful in the past, and follow their style.
2. Read Strunk and White (2000) *The Elements of Style*, a pleasantly short book, on writing style, and follow their advice.
3. Read David Crystal's *The English Language* (Crystal, 2000), and enjoy learning about the history and varieties of English writing, and then make your stylistic choices in an informed way that you can justify.
4. In some documents, such as thesis projects and books, which have the space, it may be worthwhile taking a paragraph or two to explain your choice of style. You may wish to refer to Crystal (2000).
5. If you get really serious, read an established publisher's style guide, such as the *Chicago Manual of Style*. (Make sure you get the latest edition, not a dusty old one from a library.) Also, if you get really serious, buy a smaller dictionary — if, as a writer, you find yourself turning to a big dictionary (or the web!) to look up a word to use, your readers won't know what it means either; so get a smaller dictionary.

You will write best if you enjoy what you are writing about. People marking or reading what you write will prefer writing that is enjoyable. Put the other way around: when you choose a project, choose one you will enjoy writing about. When you find that time is running short, and you cannot write about everything you'd like to, choose to write first about what you enjoy most.

10.13 Write now

Very few people say the best way to get good at something is not just to understand but to *do* it too. It's not enough to know how to write; it's not enough to do your project and wait until you know what to write; it's not enough to write as an afterthought. Hindsight in writing comes too late to help. Real writing is transforming; real writing is forethought.

When you get right into writing you are using writing to transform and polish your own thinking — as it were, leaving just the shine of the polish for other readers, not all the work you did to get there.

Now you've got to the end of your writing, it's time to go back to the beginning. Your readers will start with your title and abstract. Now you know what you've written, it's time to review and probably rewrite the title and abstract — that is, assuming you wrote them some time ago, when *the writing* was driving the project!

10.13.1 Key points

Start writing now, even before you've done the work.

1. Start to write straight away. Get into a habit of nibbling.
2. Your initial writing will make clear the holes in your argument, plan or program.

3. Address the holes:
 - (a) Plan your work to fill in those holes in your writing.
 - (b) If you are programming, modify your program to help remove the holes, warnings, verbiage and hedges from your writing.
 - (c) Or move “holes” to your Further Work section if you are not going to fill them in yourself.
4. Find out what writing tools, outliners, CSCW or version control, etc, will help your writing requirements best.
5. Refine and revise your writing as the holes get filled in.
6. Remove scaffolding.
7. Find out how to use people, like your supervisor, to get the feedback you need.

Whereas: if you write at the end, once you’ve done the work, you will discover the holes too late to do anything about them. And, very likely, you will have spent time doing work that does not need to be written up — and therefore was wasted effort.

10.14 Acknowledgments

This chapter was much improved with help from my colleagues, family, students and friends: Tim Bell, Paul Cairns, Graeme Harper, Tony Hoare, Prue Thimbleby, Sam Thimbleby, Will Thimbleby, Ian Witten.

Earlier versions were sent to these and others, who very kindly made all sorts of constructive comments. They probably found it easier to comment on drafts: my drafts were shorter, less polished (so my colleagues could find things they could help me with easily) and I wasn’t too precious about my draft ideas. I’d love to hear your comments, too.

Harold Thimbleby is a Royal Society-Wolfson Research Merit Award Holder, and this chapter was written with support from that award.