

A Few Rules from Mary-Claire van Leunen's *Handbook for Scholars*

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Writing is difficult and scholarly writing even more so. It must be formal and precise without becoming boring and stiff. Fortunately there are some rules that can help you to achieve this goal. Mary-Claire van Leunen's book [1] is a good source to find many of these rules. She covers technicalities like how to cite a work that has no title, but also gives advice of a more stylistic nature. Her work is a must for those who are writing scholarly texts regularly, such as researchers, and I advise these people to read her original work. I hope that this summary can still be useful for those who do not think it worth the time to read van Leunen's book, or those who do not have it available and do not want to buy it.

This following is in no way a well-balanced summary of van Leunen's book. I have ignored issues like how to cite a work without title. When you encounter a problem of this kind you will hopefully realize that there are rules for it. Find those rules and apply them. There are, however, also rules that you may violate without noticing. Those are the ones that I have tried to write down. So what I did was writing down the rules that I found myself breaking most often.

Citation

When you cite you must decide how much you want to tell the reader about the work you cite. Do you just want to give the reference:

For $\alpha > 0$ the function $f_\alpha(x, y)$ is differentiable [8].

Or do you want to provide more information:

Harakiri proved in his celebrated thesis [8] that for $\alpha > 0$ the function $f_\alpha(x, y)$ is differentiable.

There is no simple rule for choosing between the two alternatives. Do you want to credit Harakiri explicitly? Does the reader get some extra background information if you mention the source explicitly? Will he enjoy reading your prose more? These are all considerations you must make when deciding for one alternative or the other.

If you cite a paper with more than two or three authors you should use "et al.":

✓ Chazelle, Edelsbrunner, Guibas, Seidel, and Sharir [3] proved a number of interesting properties of the mapping \mathcal{F} .

Chazelle et al. [3] proved a number of interesting properties of the mapping \mathcal{F} .

(Here and in the sequel bad examples are marked with a \checkmark). "Et al." comes from the Latin *at aliae* or *et alii*, meaning "and others". Note that "et al." is not written in italics and that only the first author remains when "et al." is used. Instead of using a word from a foreign language, it is usually better to search for an equivalent in the language you write in. "Et al." is an exception to this rule, since using "and others" can be confusing.

✓ Chazelle and others [2,3]

Did Chazelle write a paper and did, say, Schwarzkopf write one, or is there a group of people (Chazelle, Edelsbrunner, Guibas, Seidel and Sharir) that wrote two papers?

A bracketed number is not a word and a sentence containing a bracketed number should still be correct if you leave it out. So do not write:

✓ In [8] it was proved that for $\alpha > 0$ the function $f_\alpha(x, y)$ is differentiable.

You could repair this by saying:

✓ It has been proved [8] that for $\alpha > 0$ the function $f_\alpha(x, y)$ is differentiable.

This is still bad writing. The problem is that the first part of the sentence is completely useless. It does not convey more information than simply putting “[8]” at the end of the sentence, as in the first example on the previous page, nor does it make the sentence more vivid. So the above example violates the golden rule of writing (or speaking, for that matter): if you have nothing to say, say nothing.

There is seldom any reason to tell your reader to “see” (or “refer to”) a source.

✓ See Chazelle [1] for a counterexample to our theorem.

Chazelle [1] gives a counterexample to our theorem.

Observe that getting rid of the “see” construction has made the sentence shorter without changing the meaning or making it more boring. Also note that we used the present tense in this example. Using past tense is equally acceptable, but be sure to stick to your choice, at least in the immediate vicinity.

Citing Your Own Work

Special attention is required when citing your own work. Van Leunen states that one should always say some extra words in such cases. So if you are the author of the papers [2,3,5] then you should not write:

✓ This problem was studied earlier, but in a less general setting [2,3,5].

The reader is tricked into believing that the problem has already been studied by many different authors and must be very important. Van Leunen advises to use a variant like:

I studied this problem earlier [2,3,6], but in a less general setting.

Schwarzkopf and I studied this problem earlier [2,3,6], but in a less general setting.

My colleagues and I studied this problem earlier [2,3,6], but in a less general setting.

To me these alternatives—especially the last one—sound somewhat pompous. But I guess that hiding the reference to yourself by just giving bracketed numbers is worse.

Using “We”

In technical papers the word “we” is used in different ways. If you are writing a paper with one or more co-authors you can write:

We believe that our technique can also be useful for other problems involving hyper-spheres in \mathbb{R}^{17} .

If you have bad luck and you are the sole author of the paper then you cannot use “we” in this way. In this case you should replace “we” and “our” with “I” and “my”. Do not use the clumsy “the author of the present paper”. Should you want to avoid using “I” you can do so by reformulating the sentence:

This technique may also be useful for other problems involving hyper-spheres in \mathbb{R}^{17} .

The word “we” sometimes means “you and I, reader”.

We will see in a moment why this is true.

This is perfectly acceptable, but be careful when using “we” this way. As long as the reader goes along with you, it’s fine. But if there may be readers who do not follow you immediately, don’t use “we”.

✓ We observe that this is true when $g(z)$ is a C^3 -continuous convex function with no real roots greater than π whose derivative is bounded from above by a suitable constant c .

(We observe?! It took me five pages to do all the calculations!) Abusing “we” this way is like abusing words such as “obviously”. Things that you easily observe or find obvious may not be so clear to the reader. So things had better be crystal-clear if you use phrases like “we observe” or “obviously”.

The Content Footnote

Try not to use footnotes. If you do, don’t put important information in a footnote. Your text should make perfect sense (grammatically as well as semantically) if all footnotes are omitted. If your footnote is only a few words, put it between parentheses in the text.

Footnote symbols follow punctuation, unlike bracketed numbers.

✓ Quotidian*, which sounds impressive, needs a footnote.

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The last example, though grammatically correct, is still bad writing. Why not simply write:

Unworldly, which is a more common word, doesn’t need a footnote.

Do not use symbols for footnotes that you also for some other purpose. If you denote the dual of a point p by p^* , you should ban the asterisk from your list of footnote symbols.

Scholarly Peculiarities

“As” and “Like”

“As” links a whole clause to the rest of the sentence and “like” links a noun or pronoun.

✓ The students thought that the professor was acting as a child.

The students thought that the professor was acting like a child.

✓ The students thought that the professor was acting like a child does.

The students thought that the professor was acting as a child does.

“If It Were” and “If It Was”

“If it were” is used for conditions contrary to fact, whereas “if it was” is used for simple conditions. To test the clause you can add an imaginary statement of fact. If this statement begins with “but” the condition is contrary to fact.

If the polygon were simple (but it is not) we could apply the standard techniques, but now we have to come up with something clever.

“May” and “Can”

When you ask for permission you must use “may” instead of “can”:

✓ Can I eat a piece of cake?

(Of course you can. But you may not.)

If this were all there is to it, things would be pretty simple. But “may” is also used in other situations:

This technique may have other applications as well.

If you are more sure of the applicability of your technique you write:

This technique can have other applications as well.

And if you doubt whether your technique is good for anything except your own application:

This technique might have other applications as well.

When you use “may” to express possibility, as in the example above, you have to be careful.

✓ The reader may find the proof of this lemma in Appendix A.

Using “may” in this example casts doubt on a perfectly sensible statement. Use “can” instead.

Capitalization

Don’t use too many capitals:

✓ The most interesting area of Computer Science is Computational Geometry.

The most interesting area of computer science is computational geometry.

Articles are capitalized at the beginning of sentences, sentence quotations, and titles.

✓ This work was supported by The Netherlands’ Organization for Scientific Research.

This work was supported by the Netherlands’ Organization for Scientific Research.

Coherence

I often find myself trying to glue every pair of subsequent sentences together with a connective like hence, thus, so, therefore. There is no need for this in most cases. A sentence does not stand on its own and the reader is perfectly capable of seeing the connection between subsequent sentences. A good way to avoid writing too many connectives is to simply remove all of them from a paragraph you have written. Read the paragraph again and add back the connectives only where emphasis is needed.

- ✓ The Voronoi diagram is an extremely versatile structure. Indeed, it has been used in many different application areas. Furthermore, the Voronoi diagram is a very old structure. In computational linguistics, however, Voronoi diagrams have been discovered only recently. Hence, in this area the number of applications is still limited.

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Overviews and Summaries

At some point you have probably been told that you should say things more than once: say what you are going to tell, tell it, say what you have told. This is sound advice. You cannot expect your readers to remember everything you have told them, so a reminder in the form of a summary can be helpful. Sometimes a proof is more easy to follow if you first sketch its structure. But don't put in summaries and overviews mechanically. Some people start every section with "In this section ...".

✓ 3 Computing the Voronoi diagram.

In this section we show how to compute the Voronoi diagram.

This sentence is completely useless. Always ask yourself why you want to give an overview or summary. Do you expect the reader to have lost track of the global solution after you have presented its last ingredient? Do you think the reader wants to know what is written where, so that he can easily find the parts that he is interested in? If you cannot find a good reason to give an overview or to summarize, then don't.

“Let us”

The verb “to let” can be used in different ways. A very formal way of using it is:

Let us pray.

An informal way of using “to let” is in:

Let's not go to college today.

The function of “to let” is not the same in these two examples. In the first example “let” is used as an optative particle. In the second example “let's” is modal auxiliary. It is not important to know the exact difference between the two (I don't) but there is one lesson to be learned: don't use “let us” as a more formal variant of “let's”:

- ✓ Let us distinguish the case where $\pi > 0$ and the case where $\pi \leq 0$.

You can either use “Let's” or, if you find that too informal, rephrase the sentence:

There are two cases to consider, $\pi > 0$ and $\pi \leq 0$.

(For Dutch readers: “Let us distinguish two cases.” sounds in English as stiff as “Laat ons twee gevallen onderscheiden.” sounds in Dutch.)

A Little Latin

Avoid Latin expressions and abbreviations of Latin expressions as much as possible.

✓ Balanced binary search trees, e.g. red-black trees or BB[α]-trees, have $O(\log n)$ query time.

You can simply replace "e.g." by "for example". There are also other alternatives:

Balanced binary search trees, such as red-black trees and BB[α]-trees, have $O(\log n)$ query time.

Another expression people frequently use is "etc.". "And so on" is usually better. Resist the temptation to put "etc." or one of its equivalents at the end of every list.

✓ Computational geometry deals with problems that involve geometric objects, like e.g. points, lines, circles, etc.

Three words indicating that you have picked a few examples out of many is overdoing it. One is sufficient.

Computational geometry deals with problems that involve geometric objects, like points, lines, and circles.

"I.e." is another Latin abbreviation that sneaks in too often. Writing "that is" is better. In some cases you can even omit the "i.e." altogether.

Paragraphing

If you discuss several items after a short introduction and you decide to give the items their own paragraph, then the first item should have its own paragraph as well.

✓ We distinguish palm polygons, oak polygons and shark polygons. The palm polygon looks like a palm tree. Unfortunately, a palm polygon does not produce coconuts . . .

Oak polygons look like oaks and so they are completely different from palm polygons . . .

The shark polygon looks like an elephant . . .

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The palm polygon looks like a palm tree. Unfortunately, a palm polygon does not produce coconuts . . .

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The shark polygon looks like an elephant . . .

It may seem silly to you to have a one-sentence paragraph, but this is the way to do it.

Passivity

There is nothing wrong with the passive voice, but there is no reason to forget the active voice. Often your prose will become much more vivid if you change from passive to active voice.

"Respectively"

"Respectively" is used to link members of one set to members of another:

✓ Spiders, humans, and whales have eight, two, and zero legs respectively.

Although this is a correct way of using "respectively", it is better to write:

Spiders have eight legs, humans have two, and whales have none.

This way the reader doesn't have to enqueue the items in your first list to dequeue them when he reads the second list. If you insist on using "respectively", do it, but don't abbreviate to "resp."

“That” and “Which”

Some people tend to prefer “which” over “that” because it sounds more formal. But “that” and “which” are not interchangeable.

“That” is used in a restrictive clause. A restrictive clause is essential, it cannot be deleted from the sentence:

Let S be a collection of shark polygons. We call the polygon that has the largest number of teeth the leader of the set.

The second sentence doesn’t make sense when “that has ...teeth” is deleted. So you use “that”, not “which”. Don’t put a comma before “that”.

“Which” is used in a non-restrictive clause, one that can be deleted. You should put a comma before and after the non-restrictive clause:

These polygons, which look like sharks, have one leader.

Now consider the following example:

The polygons in S , which look like sharks, have one leader.

Is this correct? That’s impossible to judge from the sentence in isolation. Do all polygons in S look like sharks? If so, “which” is correct. But if there are also palm polygons in S , “that” should be used.

References

- [1] Mary-Claire van Leunen. *A Handbook for Scholars*. Oxford University Press, 1992.