Scientific Writing for the Non-English Speaker

The book's three main sections correspond with the three main stages of a paper's journey from idea to print: planning, writing, and publishing. Within the book's chapters, complex questions such as 'How to write the introduction?' or 'How to submit a manuscript?' are broken down into smaller, more manageable problems that are then discussed in a straightforward, conversational manner, providing an easy and enjoyable reading experience.

This volume stands out from its field by targeting scientists whose first language is not English. While also touching on matters of style and grammar, the book's main goal is to advise on first principles of communication.

Scientific Writing for the Non-English Speaker is an excellent resource for any student or scientist wishing to learn more about the scientific publishing process and scientific communication. It will be especially useful to those coming from outside the English-speaking world and looking for a comprehensive guide for publishing their work in English.
5. How to Compose the Title

Things should be made as simple as necessary but not more so.
Einstein

Why Is the Title Important?

The title is, arguably, one of the most important parts of a paper. The title is not only printed first (or very close to the top) in an article; it is the part that will be read by most people. These readers must then decide whether the paper contains information that is relevant or interesting for them. The main requirements of a good title can be formulated briefly and sharply: be precise, simple, and short. The best title is one that gives the most accurate information about the content of the paper with the fewest possible words.

When formulating the title, one should also consider that many potential readers will only see the title in the different abstracting journals and services, and this constitutes the information on which they will have to decide whether to obtain a copy of the paper. Abstracting and information retrieving services, as well as Internet search engines, also use the words in the titles.

Loose or imprecise words in the title generate inexact search results. The rules that readers follow are very simple: they will pass over loose, ill-defined, or overly general titles. They will not be intrigued by cryptic titles, jokes, or vague promises. They will know that there cannot be a “Theory of everything” (Laughlin and Pines, 2000). Having an informative title is mandatory, otherwise the paper will never reach the intended readership.

In earlier literature, overly general and imprecise titles occur often. The results presented in a paper in 1957 under the title, “The influence of some cations on an adenosine triphosphatase from peripheral nerves”
(Skou, 1957) eventually earned its author a Nobel Prize. However, it is impossible to judge from the title what was novel in the paper, or even what was studied precisely. It would certainly not be considered an effective title today. The Nobel Prize was probably not given for the excellence of the title!

Developing an Effective Title

Generally, the title should indicate answers to the important basic questions: What? Where? How? What was studied: an organism, a mechanism, a community, a molecule? What was measured? And what methods were used? Where: in the laboratory, or in the field? How was the study organism or phenomenon examined? A good title indicates all these elements, so that readers can judge what to expect in the paper.

Our hypothetical manuscript contains the results of an experiment studying the effect of root exudates of 15 cruciferous plant species on food consumption by one species of caterpillar, *Helicoverpa armigera*, an important pest world-wide. Caterpillars were kept on plants to which five different concentrations of root exudates were applied, and the caterpillars’ growth (body mass) was measured over their larval period.

Firstly, consider the title “The effect of chemicals of plant origin on caterpillars”. This title is short, but it is misleadingly general. Literally, this would mean something like examining the effects of ALL compounds that can be isolated from ALL plants, on ALL species of caterpillar, using ALL possible reaction parameters, ranging from individual behaviour to mortality. It does not say if the study was done in the laboratory or under field conditions. Consequently, this would make a very poor title.

Would it be more precise if all 15 plant species were listed? Yes, but this would make the title impossibly clumsy and long. This would go against the requirements of brevity, so it is not a good solution.

How about “The effects of 15 plant species on the larvae of *Helicoverpa armigera*”? This is an improvement, because it indicates the number of plant species and the insect species on which the study was performed. However, important information is still missing: which 15 plant species were used in the study? Can they be specified somehow? Exactly what was measured on the caterpillars? How was the “effect of plant species” generated?
In order to answer the above questions, the title could be modified to “The effect of root exudates of 15 cruciferous plant species on the growth of *Helicoverpa armigera* larvae”, or even “Inhibition of growth in *Helicoverpa armigera* larvae by root exudates of 15 cruciferous plant species”. Either of these two examples is now an acceptable title: they indicate the effective agent (root exudates), the range of plants (15 cruciferous species), the reference parameter studied (growth) and the target organism (*Helicoverpa armigera* larvae). It still does not indicate if this is a study carried out in the laboratory or the field. This would be more important if the work reported here were a field study — then, even the location might be interesting.

### Series Titles, Hanging Titles, Questions and Statements

Series titles are not usually accepted. The reasons for this are, at least in part, practical: there is no guarantee that, because 13 previous articles have already been published, no. 14 will also be accepted for publication. All manuscripts are assessed solely on their own merits. Second, manuscripts are processed at different speeds, even in the same journal, not to mention different journals. For example, if manuscripts no. 13 and no. 14 were submitted to different journals, there could be no guarantee that no. 13 would be published before no. 14 (or published at all). Of course, in such a situation, you cannot ask to delay the publication of no. 14 until no. 13 is published. Such series titles serve very little purpose, apart from advertising one’s monumental achievements such as a twenty-paper series. Most journals will be unwilling to print such a series as it adds little to the specific scientific problem studied in the papers. It is best not even to try.

It is a recent fashion to have hanging titles. The title “*Doing it right: the art and science of publishing*” would be a (poor) hanging title for this book, for example. As is often the case for such titles, the first part is not necessary. Many journals now seem to accept, or even promote, the use of hanging titles but many authors see this as an excuse to give two titles. Try to avoid this. Sharp thinking and brevity is always better.

The title is not the appropriate place, either, to advertise your knowledge of pop culture, sense of fun, etc. These elements are often unnecessary, do not add to the precision of the title and, thus, do
not help the reader. What sounds funny at a party is certainly less so when printed in 14-point bold letters at the top of your most important discovery.

Also, be aware that the readership may (and, you hope, will) be drawn from a very wide cultural and linguistic circle, and they could be baffled by several “subtle” references. They may even be offended and that should be avoided.

Questions do not usually make good titles. In most cases, the readers are not interested how fascinating questions can be formulated — they want answers. Occasionally, a question can be a powerful title — but only exceptionally. For example, if the research question cannot be answered in a simple way, you can formulate a title that contains the question asked: “Does urbanisation decrease diversity in ground beetle assemblages?” (Magura et al., 2010)

In some cases, the main results of the investigation can be summarised in one sentence. Such a statement can form an effective title, such as: “Insect feeding mobilizes a unique plant defense protease that disrupts the peritrophic matrix of caterpillars” (Pechan et al., 2002). Generally, however, such one-statement titles cannot be formulated and should be avoided. Most studies are more complex and condensing them into one sentence is difficult or impossible.

Syntax and Jargon

The desire to be concise does not supersede the requirements of grammar. In the drive for brevity, look carefully at your syntax and use of jargon. It is not the same thing to suggest a “New colour standard for ornithology” or a “New colour standard for ornithologists”. The former title promises a new tool for the science of ornithology, while the latter may be helpful if the aim is to distinguish ornithologists of different colours, a somewhat improbable purpose.

Abbreviations and jargon, chemical formulas, trade names, and similar words should also be avoided in the title. In case of doubt, it often helps to ask the question “would anyone find this word if searching in an index?” If possible, unusual words and other non-general terminology should also be avoided.
Long titles are often too long because they contain non-specific “waste” words, or “fillers”. Such words often occur at the beginning of the title. “Studies on”, “Observations on” “Description of” and “Investigations on” are typical examples of such fillers. Starting the title with The, An or A is also a waste because these are also uninformative for the indexing services. They are sometimes necessary for correct grammar, but consider carefully if they can be avoided. Similarly, words such as “changes”, “effects”, “impact”, or “trends” are not powerful. Changes are everywhere in nature, so, in detecting a change yourself, you may not have discovered anything novel. Similarly, experiments are designed to detect effects or impact — no need to advertise this in the title. What kind of effect, a change in which direction — indicating this would be more informative.

When to Write the Title?

The writing process is rarely “linear”: very few people can write a manuscript from the beginning to the end in one go. If you, my reader, are one of those fortunate people, you probably do not need this book. I envy you. Most of us, however, are not like this: we do not write in the same sequence as we read. Even though it will be printed (and read) first, you do not have to have a perfect title before moving on to writing the other parts of a manuscript. Formulating a title can be left to a late stage of the writing process.

My suggestion is to spend a little time at an early stage in the writing process, and jot down a few key words that you feel should be in the title. This will be your provisional title. After this stage, the title can be put aside, and you can start working on other parts of the manuscript. At about one third of the way into the writing process, return to the title. Now you will have a clearer idea of how long the paper will be, what the focus will be, and which aspects will be emphasised. Keeping these points, and your intended audience, in mind, try to formulate a more complete working title. Finally, near the completion of the manuscript, when virtually all the writing is done, consider the title again, and decide on the final title.
Running Title

Many journals print, at the top of each page of the paper, a short title called the “running title”. This is a specially shortened version of the title (because of space limitations). If the journal prints such running titles, the specifications — usually in terms of the maximum number of letters and spaces — are given in the “Instructions to authors”. It is best to follow this advice, and construct a running title if required. If the journal prints running titles and you do not supply one, someone, usually the editor, will construct one and you may not be happy with the result. After all, who is better qualified to create a meaningful short title than you, the author?