



# The style files

Tony Roberts

## Inform with titles, abstracts and introductions

Many years ago Ernie Tuck told me that when he has a research article to read he first reads the Introduction and the Conclusion. Why? Because Ernie wants to discover quickly whether to invest time to read the entire article.

But I ask you: why should Ernie have to find and read the conclusion? Answer: he reads the conclusion to find out important information. But surely such important information should be at the start of the article, in the abstract and introduction, where information is easy to find. Scientists should be able to decide whether to read an article in detail by reading the *start* of the article. Consequently, write to *convey quality information in the abstract and introduction*. Include some results.

Kelley

*Quite aside from format and style, mathematical writing is supposed to say something. Put another way: the number of ideas divided by the number of pages is supposed to be positive.*

**Attract with your title.** The title is your first chance to lose a reader; thus make the title interesting. Start with a keyword. Put in a verb and make the title a statement. Be specific.

For example, the vague “Stochastic inertial manifolds” should be the definite statement “Stochastic inertial manifolds exist and attract” which informs us what aspect is being proved.

**The abstract is not a table of contents.** Instead, say what you deliver in the article, give the essential qualities of the research

and its results. Use less than 50 words for each of the following questions:

- What was done?
- Why do it?
- What were the results?
- What do the results mean in theory and/or practice?
- What is the reader’s benefit?
- How can readers use this information for themselves?

The abstract is probably all most readers read—the abstract is often the only *freely* available information. The abstract must be a complete though necessarily sketchy description in itself.

A wide range of people in your discipline may read your abstract if you have made the title interesting. Keep the level of jargon low, perhaps to that appropriate to Honours degree students.

**The introduction must show your story is worth reading.** The introduction is likely to be all that interested readers read; again it must be complete in itself. Use a level of jargon appropriate to say post-graduate students. Place your work in the context of other research. Summarise your main results, albeit in a suitably simplified form.

Jonathan Shewchuk

*the introduction is the most important part of your paper, because few of your readers will ever read beyond it. And there’s not much hope that any of them will if you don’t grab their attention from the start. So it’s a mystery why so many papers begin with twaddle...*

Face it: only the dedicated diehards are going to want to wade through the details of the rest of the paper. Give key results and connections in your introduction. Address the same questions as those given above for the abstract, but address in more detail and give copious citations to the work of others and copious forward references to later sections where you give the full gory details.

Avoid what Shewchuk<sup>1</sup> calls “an oozing cyst like this moribund specimen:

*This paper is organized as follows. In Section 2, we describe . . . . In Section 3, we describe . . . . In Section 4, we prove . . . .”*

Instead, *throughout the introduction* embed forward references to the later sections. Such forward references must be placed in the description of what was done, your results and their meaning.

**Summary.** People spend time on what they perceive will benefit them. Structure your document so that even those who read only a little can take away something of value—that way they are more likely to take note of what you say and come back for more. Help Ernie and me by filling the title, abstract and introduction with understandable and useful information.

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<sup>1</sup><http://www.cs.cmu.edu/~jrs/sins.html>