The Abstract Rescrutinized

It would seem that little more could be said about writing abstracts after K. K. Landes's (1951, 1966) concise classics, but an irritating new weakness seems to be creeping into manuscripts, calling for further scrutiny. I refer to the growing tendency of authors to write long, eloquent abstracts that are actually *introductions* rather than summaries. Let me reproduce one sentence (slightly disguised) that begins the "abstract" of an otherwise excellent manuscript I am currently reviewing: "The long-standing concept of the _____ region of _____ as part of the stable craton which has undergone only minor tectonism during the past several hundred million years is being modified in view of accumulating evidence for minor, but widespread Quaternary and recent activity." This preamble is followed by 1½ similar pages, which would be a good introduction but is not a good abstract.

I would like to help authors avoid this problem by adding a few refinements to Landes's maxims. First, start the abstract by telling the reader at once what the paper *is*: new data, a review of progress, a new technique, a synthesis, or whatever describes the *nature of the paper*. To be sure, this recommendation can in principle be followed by a well-designed title, such as Isachsen's (1975) "Possible evidence for contemporary doming of the Adirondack Mountains, New York, and suggested implications for regional tectonics and seismicity," almost an abstract by itself. But if the title does not make it clear what the paper is, the abstract should, preferably in the first line: "This paper reports a comparative study of digital image enhancement techniques for synthetic aperture radar (SAR) using SIR-B and Seasat images of the Canadian Shield" (Masuoka et al., 1988). This first line should not be a simple restatement of the paper's title.

A second suggestion: write the abstract in a terse, almost telegraphic style, saving your eloquence for the body of the paper. The abstract is not an introduction to the paper, but a freeze-dried version of it, so to speak, intended as a "condensation and concentration of the essential information in the paper" (Landes, 1966). It should be written for quick reading, with the assumption that interested readers can go on to (or look up) the paper itself. Unnecessary descriptive phrases ("critically placed"), qualifiers ("limited number"), and caveats ("it must be pointed out") that may be necessary for completeness in the text should be left out of the abstract if at all possible. (The examples quoted are from actual manuscripts I have recently reviewed.)

A final suggestion: pack as much specific information into the abstract as possible—locations, rock names, temperatures, pressures, anomaly values, stratigraphic thicknesses, petrologic systems, and the like. The way to do this is to cancel temporarily the assumption of the previous paragraph, and to write the abstract as if it were all that would survive the fall of civilization. There are obviously limits to how much can be included in an abstract, especially without figures, and it may even be necessary to use phrases detested by Landes, such as "is described" or "is presented." But abstracts can be surprisingly informative and self-sufficient if properly written.

A word on timing: I suspect that many authors make the mistake of writing the abstract before the paper. I used to do this myself, until I found I was writing—yes—introductions. The way to avoid this is obviously to write the abstract after the paper is finished, when you will know exactly what you are summarizing.

Following Landes's precedent, I present an abstract of this paper.

> This paper presents three suggestions for better scientific abstracts: begin the abstract by briefly describing the *nature of the paper* (new data, review, critique, etc.); write the abstract not as an introduction to the paper but as a *tersely styled summary* of its essential information; and include as much *specific information* (locations, compositions, temperatures, etc.) as possible. Write the abstract after finishing the paper, to avoid the common fault of abstracts that are good introductions but poor summaries.

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