

# A Primer of Mathematical Writing

*Reviewed by Paul R. Halmos*

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**A Primer of Mathematical Writing**  
Steven G. Krantz  
223 pages  
American Mathematical Society  
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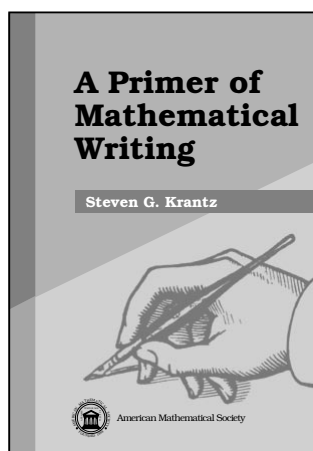
This is a book that adds new insights to the art of mathematical writing, calls attention to the standard sources, and reiterates and reemphasizes the standard wisdom. It is largely a personal book—it consists of the author’s opinions (prejudices?, recommendations?, often virtually orders!) about the subject—but it is at least partly traditional. Its subtitle is *Being a disquisition on having your ideas recorded, typeset, published, read, and appreciated*. His credentials for writing the book are, he says, as follows: “I have written about one hundred articles and have written or edited about fifteen books. I have received a certain amount of praise for my work, and even a few prizes; and I have received plenty of criticism.”

The main thesis is that it is worthwhile to write mathematics well, and the author’s advice to you (the reader) is “to spend an hour or two with this book, and perhaps to spend another hour or two considering how its precepts apply to your own writing.” The book is intended in large part, he goes on to say, for the novice mathematician.

Many of his recommendations are unarguable, and the first sentence of the first section of the first chapter is surely one of them: “In order to write effectively and well, you must have something to say.”

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The tone of the writing is “popular”—colloquial. To emphasize that “you must know consciously who the audience is,” he says, “If you are writing a letter home to Mom, then your audience is Mom and, on a good day, perhaps Pop.” Quite a bit later in the book we are told that

we are not to “shovel the old BS around.”

There are many intentionally inserted examples of incorrect grammar and usage labelled with a conspicuous symbol (in the shape of a heavy ornate cross). The first such example is “As a valued customer of XYZ Co., your call is very important to us.”

The book is full of admonitions (positive and negative—do’s and don’ts). An early one is “Stop when you have said what you have to say...and then shut up”—to which he adds:

“‘Sticks and stones may break my bones, but words will never hurt me’ is perhaps the most foolish sentence ever uttered.”

Avoid, he says, unnecessary notation. To support that he mentions (as an example not to be imitated), a statement he attributes to Mary Ellen Rudin, to wit:

“Let  $X$  be a set. Call it  $Y$ .”

I register a complaint—in several instances he puts in quotations such as that one with no sup-

porting reference. The fussbudget scholar in me worries about that.

The technical aspects of writing a paper are discussed in detail: put your name even on drafts, he says; put the date on the work, number its pages, write on one side of the paper only—like that. He adds: “Some authors number their theorems from 1 to  $n$ , their definitions from 1 to  $k$ , their lemmas from 1 to  $p$ , their corollaries from 1 to  $r$ —each item having its own numbering system...as a reader, I find this method maddening; the upshot is that I can never find anything.”

More: plan your notation in advance, use English and thereby minimize the use of cumbersome notation; think about word order. As an exercise, insert the word “only” into all possible positions in the sentence

I helped Carl prove quadratic reciprocity last week.

Do not use contractions (don’t, can’t, I’m) in formal writing [I object; why not?]. Observe that there is a shade, but an important shade, of difference between the statements

Let  $f$  be a continuous function

and

Let  $f$  denote a continuous function.

*Infer* and *imply* mean different things. Use but don’t overuse *obviously*, *clearly*, *trivially*. Do “different from” and “different than” mean the same? (You will have to decide which usage you prefer, but do be consistent. According to some authors “different than” is correct only in settings such as “these are more different than those”.)

The standard horrors of stylists and grammarians receive attention, of course: *farther* vs. *further*, *hopefully*, and split infinitives. Is a preposition a permissible word to end a sentence with?; do *shall* and *will* mean the same thing? A pertinent standard example is

“I will drown and no one shall save me”

—is that a statement by a nonswimmer who has lost hope, or is it the declaration of intentions by a would-be suicide?

On how to organize a paper he gives a curious piece of advice that I confess I have never thought of: ask a person before you thank him in public. Here is some other organizational advice: do not necessarily organize in strict logical order (this has a reference to Piaget); strive to hold the statement of a theorem to fewer than ten lines—which you cannot do if you insist on stating twenty-five hypotheses; do not supply too few or too many definitions; in a bibliography the practice of listing abbreviations (as

“Knuth, 1992”) in lieu of correct bibliographic references is irresponsible.

[Near the beginning of the discussion of what to do with the paper once it is written he says, “Let me back-peddle a minute”—and I say ouch!]

Another key to success is actually making some progress—not like the friend who has a twenty-five step program for proving the Riemann hypothesis: “Count to twenty-four and then prove the Riemann hypothesis.”

Collaborative work is discussed; the discussion begins with “I have written a great many collaborative papers, and some collaborative books as well.”

At the beginning of Chapter 4 there is a quotation—here it is in full:

“Sometimes a cigar is only a cigar. Sigmund Freud.”

That makes me unhappy—because no reference is given and because, I think, the quotation is not accurate. The reference librarian I called attributed to “The Betrothed”, by Rudyard Kipling, the line

“A woman is only a woman, but a good cigar is a smoke.”

Of course, for all I know, Freud could have said what is here attributed to him—but did he?<sup>1</sup>

The chapter goes on to discuss letters of recommendation and has, I think, some small blemishes. One is the word “conundra”, which is not in the *American Heritage Dictionary*, another is the frequent use of “funny” made-up names, such as Mergetroyd Mittelschlachenmeyer; and still another is a quotation from a letter that Krantz himself wrote that begins “I consider myself to be a rather good teacher, but I really learned something when watching Mr. Spiro Agnew with his class.”

In the discussion of book reviews there is a (quite properly attributed) two-paragraph summary of some of my opinions (the “my” in this sentence refers to the writer of this review), but not only is there no reference to the bibliographical source of that summary—there isn’t even a reference to the summary itself in the index of the book.

In this same connection, Krantz mentions the three precepts “Is it new, is it correct, is it surprising?”, and that bothers me for two reasons. One is that (a) I am not sure it’s accurate, and the other is that (b) it is attributed to Littlewood. In my own writing on what to publish (in the

<sup>1</sup>The author and the reviewer are both correct. Kipling’s line occurs in stanza 25 of “The Betrothed”, published in *Departmental Ditties, 1886* (Bartlett’s *Familiar Quotations, Fifteenth Edition, 1980, p. 707, #6*). The other line is attributed to Freud (*ibid, p. 679, #8*) —Ed.

*Monthly*, January 1975) I wrote “Is it new, is it true, is it interesting?”, and apparently I thought I was quoting Hardy. After reading Krantz’s book, I searched again, but I couldn’t find the quotation in the works of either Littlewood or Hardy.

Other technical matters that get discussed include blackboard technique, the use of transparencies, and the best possible “signature” to an e-mail message, which he says should be “something like this”, and proceeds to present a complete reproduction of the one he uses.

One piece of advice says that you are not to “consider writing a book until you have tenure and are established somewhere”. There is much fond mention of L<sup>A</sup>T<sub>E</sub>X. There are suggestions about “what to do with the book once it is written,” which lead to a discussion of contracts with publishers.

Are we to write on a computer? Are we to make backups? Are we to use word processors? Is T<sub>E</sub>X of value? The answers are by and large yes.

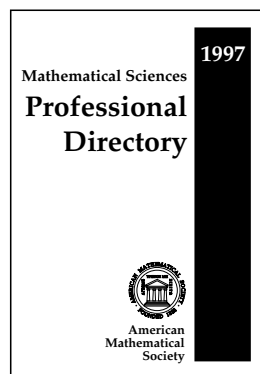
The last chapter is very short (essentially only one page of text); its title is “Why is writing important?”

The bibliography is well labelled (but not numbered); I counted forty-nine entries in it; the index is long and detailed (nine pages). The bibliography contains references to the famous University of Chicago *Manual of Style*; to Fowler (*Modern English Usage*); and to some earlier literature about writing mathematics, such as Gillman, Higham, Knuth, Okerson (with the title of her article misprinted as “Who’s article is it anyway?”), Steenrod et al., Strunk and White, and van Leunen.

Is this a useful book—should you keep it on your desk? I say yes, and I am 75 percent sure. Its purpose is to make you enjoy writing and be right when you write—and I think that in many cases it will succeed.

## American Mathematical Society

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