A Primer of Mathematical Writing. By Steven G. Krantz. American Mathematical Society: Providence. 1997. xv+223 pages A$31 (paperback). ISBN 0-8218-0635-1

Handbook of Writing for the Mathematical Sciences. By Nicholas J. Higham. SIAM: Philadelphia. 2nd edition, 1998. xvi+302 pages A$63 (paperback). ISBN 0-89871-420-6

Unfortunately, good mathematical writing is rare. Some writers even claim that mathematical precision prevents lucid and accessible writing. Krantz and Higham seek to change this perception by explaining how to write on mathematical topics with clarity and accuracy.

Many good books on writing are already available, including the influential and famous Strunk & White (1979) and Gower (1986), and my own favourite (and less famous) Murray-Smith (1989). However, some aspects of writing are peculiar to mathematics, and these new books provide a helpful addition to the literature. While the books are about writing, they are also about how to communicate more generally in the mathematical sciences.

Both books include a chapter providing general comments on writing style and grammar. They discuss such issues as writing in a passive or active voice, the use of abbreviations and contractions, common spelling traps, repetition and overused words, distinguishing between 'shall' and 'will' and between 'that' and 'which', and punctuation. Both authors provide advice on how to refer to yourself: should you say 'we', 'I', 'one', or 'the author'? (Higham prefers 'I' for its more personal contact with the reader and 'we' when it is used in the sense of 'the reader and I'. Krantz prefers 'we' because it is customary in mathematical writing.) Neither author becomes too technical; they provide many interesting (usually mathematical) examples to help explain the key ideas, and where necessary they give references to more general writing guides for further discussion.

Higham contains a useful chapter called 'Mathematical writing', covering notation, the use of words instead of symbols, writing proofs, punctuating and displaying equations, and other topics. Krantz is less detailed on notation, but has a chapter called 'Topics specific to mathematics' which covers the writing of theorems, proofs and definitions. Krantz writes for mathematicians and assumes papers are written in the Definition/Theorem/Proof style.

The same chapter in Krantz also discusses how to organize a paper, how to write an abstract and how to write a bibliography. Higham is more general and more detailed. He covers this material in a separate chapter entitled 'Writing a paper' and discusses organization, structure, title, keywords, the introduction, tables, citations, the conclusion, acknowledgements, the reference list and other topics. Higham also provides a chapter called 'Publishing a paper' which discusses the choice of journal, the refereeing process, and checking proofs.

Krantz provides brief but helpful advice on writing a survey article, an opinion piece, a letter of recommendation, a book review, a referee's report, a talk, a grant application, a *curriculum vitae*, a job application, and email. He provides more detailed advice on writing a book. In a similar vein, Higham has chapters on writing a thesis, writing a talk, giving a talk, and preparing a poster. Higham's chapters on writing and giving a talk should be compulsory reading for every conference speaker!

Krantz concludes his book with a chapter called 'The modern writing environment' which discusses the use of computers, TEX, spell checkers, etc. This chapter often assumes the writer is using a Unix operating system and the comments are rather dated despite the book's recent publication date. For example, Krantz claims that word-processed documents cannot be sent (directly) by email because they are not ASCII files. In fact, all modern email packages on PCs are able to send non-ASCII attachments including word-processed documents. He also mentions WordStar as a popular word processor for the PC (the last version was released about 10 years ago) but fails to mention the most popular word-processor, Microsoft Word. Krantz exhorts his readers to use TEX or LATEX and avoid word-processors.

Higham has two chapters on computing: one on TEX and LATEX and one on other computer-based aids. His discussion is much more modern and more relevant to users of non-Unix computers. He provides tips for using LATEX 2_ε, BIBTEX (for generating a bibliography) and MakeIndex (for automatic index generation). Higham also provides five appendices including a summary of TEX and LATEX symbols and commands for the Unix text editor, emacs.

Both books are aimed more at mathematicians than statisticians. For example, Higham mentions Netlib as a useful internet resource; Statlib is the corresponding statistical resource. Higham

also mentions *Mathematical Reviews* as one of the best ways to track down a reference; statisticians generally find *Current Index in Statistics* a better tool for our discipline. However, in most areas Higham provides advice relevant to all the mathematical sciences including statistics. Krantz is aimed at a narrower audience of writers like himself — research mathematicians.

As you would expect, both books are very well written and make interesting reading. Krantz, in particular, is lively, entertaining and provides many amusing anecdotes. Higham is usually more informative and less entertaining although he always retains the reader's interest. In his preface, Krantz describes Higham's work as 'more scholarly' and his own as 'some friendly advice from a colleague'. Consequently, Krantz is shorter (with fewer pages and fewer words on each page). For some reason, both authors begin each chapter with a collection of relevant and mostly amusing quotations.

These are excellent books and both are worthy candidates for a statistician's library. They would be more useful on your personal bookshelf than in a shared library, so that they can be consulted regularly. If you can buy only one book, get Higham — and use it.

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References

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