

Writing for Publication: The Engineer's Obligation

HARRIET FRIEDSTEIN

The engineering professional has an obligation to the discipline to communicate, either through papers delivered at topical conferences or through journals and magazines. This article describes the advantages and disadvantages of writing for publication. Once the key is established for the need to write for the profession, some basic guidelines are offered for the novice. Suggestions are given on how to get started; how to generate ideas into articles; what to do in the actual writing process from first to final draft. Finally, the author offers some suggestions for turning the draft into a polished manuscript.

In our technological society, we need more technically competent writers for the multitudes of journals and magazines that proliferate. Non-fiction informational articles compose the largest percentage of published works today. Should we assume that all these writers are professional journalists? True, some are, but a great many are not. Their interests in technical subjects and their skills in writing have given them a chance to communicate with the reader. However, writing is not to be limited to the journalism majors.

Yet, writing takes time to develop. In our society, where we expect instant potatoes, instant photography and instant relief from acid indigestion, we find writing takes some effort, and for some, may not come naturally, nor easily. Jean Jacques Rousseau summarized this succinctly, "Whatever may be our natural talents, the art of writing is not acquired all at once." How true!

In addition, technical writing needs more than just an interest. Accuracy and in-depth understanding are essential if the ideas conveyed are to be factually correct. It follows that the professional scientist and engineer, whether in the classroom, in the laboratory or in industry has an obligation to the discipline to communicate the ideas generated. Practically every technical society has a publication which includes news of the association, features on the latest developments and discoveries in the field, information about new and unusual ideas and new insights to old problems. There are many solutions to old problems; new meanings to old concepts; and new proofs to standard

theories. But without an avenue of communication, knowledge would remain isolated and stagnant.

Most of the technical writing, both on the professional level and for the lay public, is done by a small percentage of the professional scientists and engineers. Clearly, this should not be the case. It is the obligation of science and its professionals, not only to investigate new applications of theories and concepts, but also to communicate those developments. This article presents the plusses and minuses of writing, how to get started, how ideas are generated, the actual steps in writing and preparing the manuscript.

Why Write?

If the reader enjoys reading technical magazines and journals, what does the writer feel? In other words, why do writers write? There are several reasons. First, people want to communicate with one another, and writing is one way. Second, being able to produce a publishable manuscript is very gratifying. The first time an author sees his name in print, there is a feeling of pride. When one's colleagues indicate they have read the article, the writer may experience a greater sense of elation. Third, writing can be an enjoyable hobby. This can be carried with one throughout life, from subject to subject, from interest to interest, and only grows with continued pursuit. Fourth, writing offers a sense of satisfaction which comes from recognition of professional achievement—and professional recognition may lead to promotions or salary increments. Fifth, as fears about writing subside, authors find additional outlets for their talents will surface. New opportunities may present themselves; for example, fees for writing commercial articles; fees for reviewing manuscripts; editing possibilities; and possibly, an opportunity to write a book. If one becomes prolific and well-known as a writer, speaking engagements may follow. These presentations usually carry honorariums and money for travel expenses.

On the other hand, writing can be very frustrating. Generally, it is not easy, and one article may need many rewrites. Second, writing is a lonely hobby where isolation and quiet locations for concentration may be necessary. Finally, not all articles written find their way into print, and a fear of having unfinished or rejected manuscripts may cause feelings of doubt, anger or defeat.

So, whether you are compelled to write because of company needs, or have ideas you wish to share with col-

Harriet G. Friedstein is Assistant Professor, College of Continuing Education, Rochester Institute of Technology, Rochester, New York.

leagues, or write for the pleasure of writing, the question becomes “how to begin?”

Getting Started

One of the best ways to begin a writing career is with a “letter to the editor.” It is usually short, concise and limited to one topic. If you have never written before, this might be the best way to begin. Many published articles will produce reactions. These reactions should be set into a letter.

Another place to begin might be in writing book reviews. While specific skills are needed for good reviews, the reviews are generally short, concise and limited to one topic, namely the content of the book. If you contact the editor of a journal and inquire about how to become a book reviewer, you will be surprised to learn reviewers are needed. The editor of the journal or magazine will usually send you instructions for reviewing and their requirements. It is important that the standards of the particular publication be followed.

If your expertise is in a particular field, your talents might lie in reviewing manuscripts of other authors. Again, the way to begin is to write the editor and offer your services. Although your name will not appear in print, the process of reviewing other manuscripts gives you the opportunity to see how others write. For many would-be authors, this gives them the confidence to begin on their own.

Once you have passed these stages, the time to write a full article presents itself. How do you begin? First, know the audience who will read your article. You should be familiar with the topics most favored for a publication. If you are currently a subscriber to the publication, you are already one step ahead, and should consider writing for it. If this journal does not suit your style or expertise, then the library would be your next step.

Second, it is important to follow the “instructions for authors” frequently published in each journal. In other journals, if it cannot be found, then request instructions from the editor. For commercial journals and magazines, their requirements are especially critical to the budding writer. Since each publication has its own style, and many editors refuse to review manuscripts that do not fit, it is all the more important to have this at hand. For some of the more prestigious publications, manuscripts are on an invitation only basis. Therefore, ascertain if the publication in which you are interested accepts unsolicited papers, otherwise you have expended energy for nothing.

Ideas are Everywhere and Anywhere

Many would-be authors question their ability to produce novel concepts. However, most would not question their opinions and reactions to things around them. Ideas come from everywhere and anywhere. Sometimes images pop up at the most inconvenient time. Sometimes an impression will form when the author reads the evening newspaper, “Implanted Electronic Device Aids Deaf to Hear;” or during a television program: “Can the transmission of the

signal be improved?;” or during a brief difficulty with a computer program; or while downhill skiing, “How to prevent runaway skis with a new type of device;” or while eating ice cream, “Can ice cream crystals be kept small by improving the refrigeration process?”

Finally, ideas are indeed everywhere. Visual and auditory stimulations are endless. It is the mind that receives these and creates new ideas from them. The generation of ideas is endless, while the effort to keep and use them suggests the creativity of the individual.

A File of Ideas

To prevent the loss of these valuable thoughts, ideas and impressions, it is useful to carry a small notebook and jot down the fragment of an idea for future development. Once an idea is lost, it may be lost forever. You may wish to cut out an interesting article from the evening paper. Or copy an article from a magazine for future reference.

By keeping notes and/or copies of these articles, you have a ready file of ideas when you find the time to write. A filing system with topical headings can hold the clipped articles or your rough notes. If manila folders are not convenient, you may want to use loose leaf notebooks with topic dividers. Whatever method you choose to keep thoughts from disappearing is not important. What is important is to establish a reference system to help you write an article when the time is available.

The Blank Paper Syndrome

Once the idea jells, and you have decided which publication is suitable, it is time to write. When the paper is in the typewriter, you might expect words to flow rapidly. However, many writers stare at a blank page for a long time. They can’t start. This phenomena is not limited to beginners nor to amateurs. Many professional writers go through dry spells. Sometimes it is just too difficult to put the first words on paper. Actually, it is much easier to edit a paper than to create a coherent manuscript. Professional writers find a quiet, distraction-free environment very helpful. Some writers must have set hours. Others write best in libraries, some at home, while still others find the office an ideal solution. Whatever place inspires you to write, use that location as your “writing place.”

Write, Write, Write

Some writers find an outline, either formal or informal, the best preparation for organizing the manuscript. Many books on developing and using outlines may be helpful. Outlines help keep you on target, but do not feel constrained by any “official” methods of outlining. Do what comes naturally. However, ideas should flow and follow one another in logical sequence. For example, the opening paragraph should introduce the topic. The body of the paper records your thoughts in logical order. Finally, closing paragraphs should summarize the important points raised.

Once the words flow, and appear before you, it is very important to continue to write without stopping to check spelling, grammar or reference errors. These errors can be corrected later. However, the ideas may be lost if writing is interrupted. Write freely, with as few interruptions as possible. If a word escapes you, leave a blank, or put a dash in its place. If a word spelling looks incorrect, put a small "sp" or a question mark next to the word to check later. If a sentence needs to be changed or clarified, do it in the editing process.

If you find paragraphs which do not follow logically, or do not seem to fit, do not stop writing. It is better to continue to write while thoughts are fresh. Minor corrections can be made during rewrite. And, never rip up your discarded sheets. That idea may be needed sometime in the revision, or to verify a data point.

First Draft, Second Draft, Etc.

Now comes the easy part, editing the manuscript. Writing a paper for publication is really done in several steps. The first step is to get the concepts on paper. The second is to revise the paragraphs and sentences so the paper reads well. The third step is to make all grammatical and spelling corrections. This should be followed by a reference check. That is, all footnote numbers should coincide with the references, to ensure accuracy. Additionally, all authors names and titles should be confirmed as correct. Finally, all charts and graphs should be checked for accuracy and legibility.

If you have difficulty typing, or detest retyping, word processing programs for a computer are more than just a convenience, they are a necessity. These programs take some of the drudgery out of revising. When the article is stored on a disk, it is relatively simple to add or delete sentences, or move whole paragraphs. A dictionary program helps with spelling errors. For less experienced writers, the cut-and-paste method still proves less time consuming than several retypings.

Once you are satisfied the revision makes the article acceptable, the time has come to give copies to several of your colleagues for critical examination for accuracy, clarity and expression. Trusted colleagues offer an invaluable service. After their suggestions are incorporated into another draft, put the manuscript aside for a time. Then, when you reread the manuscript, you will be surprised at the number of changes you want to make. Consequently, when you are satisfied the article is clear, accurate and readable, the final draft is ready for retyping.

Preparing the Manuscript

The "instructions for authors" prepared by the editors of the publication should be followed explicitly. Generally, the manuscript should be typed double-spaced on 8½"x11" paper, on one side only, with wide margins for editor's marks. After the final typing, the manuscript should be

proofread for typos, spelling and any other glaring errors. Ask a friend or spouse to read it. Since they have not seen it previously, they will be more likely to spot errors. With the large number of manuscripts journal editors receive, they are not interested in reading manuscripts that are sloppy, hard to read or contain numerous spelling errors. These almost guarantee a rejection slip unless the topic is very unusual.

When all mistakes are corrected and a final version typed, send the required number of copies of the manuscript to the editor. Again, check the "instructions for authors," since many editors' requirements differ. Finally, the manuscript is ready to be mailed. One final word: use a sturdy envelope with the proper postage. Once it is mailed, relax—and good luck!

RECOMMENDED READING

1. *Barzun, Jacques and Henry F. Fraff* The Modern Researcher 3rd Ed., *Harcourt Brace Jovanovich, Inc.*, 1977, New York, N.Y.
2. *Bennett, John B.* Editing for Engineers *John Wiley & Sons*, 1970, New York, N.Y.
3. *Bernstein, Theodore M.* The Careful Writer: A Modern Guide to English Usage *Atheneum*, 1977, New York, N.Y.
4. *Day, Robert H.* How to Write and Publish a Scientific Paper *ISI Press*, 1979, Philadelphia, Pa.
5. *Dodds, Robert H.* Writing for Technical and Business Magazines *John Wiley & Sons*, 1969, New York, N.Y.
6. *Elbow, Peter* Writing With Power *Oxford University Press*, 1981, New York, N.Y.
7. *Hall, Donald* Writing Well *Little, Brown, and Co.*, 1973, Boston, Mass.
8. *Kirkpatrick, T.W. and M.H. Breese* Better English for Technical Authors *Macmillan Co.*, 1961, New York, N.Y.
9. *McCormick, Mona* The New York Times Guide to Reference Materials *Popular Library*, 1971, New York, N.Y.
10. *Michaelson, Herbert B.* How to Write and Publish Engineering Papers and Reports *ISI Press*, 1982, Philadelphia, Pa.
11. *Mitchell, John H.* Writing for Professional and Technical Journals *John Wiley & Sons*, 1968, New York, N.Y.
12. *Strunk, William Jr. and E.B. White* The Elements of Style 3rd Ed., *Macmillan Co.*, 1979, New York, N.Y.
13. *Trelease, Sam F.* How to Write Scientific and Technical Papers *The Williams and Wilkins Co.*, 1958, Baltimore, Md.
14. *Van Leunen, Mary-Claire* A Handbook for Scholars *Alfred A. Knopf*, 1979, New York, N.Y.
15. *Zinsser, William* On Writing Well: An Informal Guide to Writing Nonfiction *Harper & Row*, 1980, New York, N.Y.