

# THE MECHANICS OF SCIENTIFIC PUBLISHING, PEER REVIEW, AND ETHICS IN PUBLISHING

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This paper is a condensed version of a short-course given at the National University of Mexico, UNAM, in Mexico City last year. The discussion centers on what your editor is looking for, and what, exactly, it is that he or she does. The information and anecdotes included here arise from the author's experience as editor of the *Canadian Journal of Physics* (*CanJPhys* or *CJP*) published by NRC Research Press/Canadian Science Publishing.

Scientific content is central to this, but a recurrent concern is about questions of attribution of textual material used and the avoidance of any possible implications of plagiarism or duplicate publication. Communication is an essential part of the scientific endeavour. It is often stated that, "If you cannot communicate what you have done (verbally and in writing) then you haven't done it!" Whether we like it or not, English has become the world-wide language of communication and a working knowledge is a great, if not essential, part of preparation to becoming a working scientist. For authors who do not have this knowledge, a friend or colleague with good English skills is a crucial asset. To write well requires not only language skill, but an understanding of how to write briefly and concisely in a manner that will inform and interest a reader who is not a specialist in the author's narrow sub-field.

What is your editor looking for and what does he do? The editor is looking for new and novel ideas, interpretations or results, which will be of interest to the readers of the journal. A cover letter outlining why the author chose this particular journal and why they think the manuscript might be of interest to that journal's readers is always helpful.

The editor is assisted by Associate Editors who are specialists in the various subfields of physics. They assign

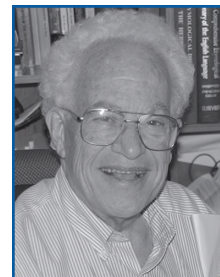
## SUMMARY

**What is the editor looking for, what is the process for submitting a paper, how does peer-review work, and what ethical principles should govern the presentation of your work?**

papers to referees who are experts on the topic at hand. The referees, associate editors, and, ultimately, the editor, are looking for work that contributes significantly to the structure of the body of knowledge that we, as scientists, are building. It must be new, interesting to the community served by the journal, and clearly and concisely communicated. The editor and associate editors are usually assisted by computer software that keeps track of the status of submissions, by software that aids in finding referees, and by software that aids in detecting plagiarism. Two external referees are usually used, although the associate editor may occasionally choose to act as one of the referees. It is the prerogative of the editor and the associate editors to choose to reject a paper without review if it is deemed to be better suited for publication in a more specialized journal or if it is judged to be obviously unscientific or nonsensical.

My father, also a physicist, taught me when I was a schoolboy, that the FIRST qualification for being a scientist is ABSOLUTE HONESTY. What follows from this?

- a. You must be totally scrupulous in your references to everything that has gone before you on the topic you are working on. You should make references to all recent work that has led up to yours, and, if necessary, indicate one or two works that might contain a comprehensive set of references leading back to the earliest work on the topic.
- b. You cannot use ANY text or data that anyone else has published without putting it in "quotes" and making an explicit reference. I get about one case every week at the *CanJPhys* in which an author has violated this rule.
  - i. Most common is repeated publishing, i.e. submitting a paper to us that the author has already published elsewhere, in an effort to expand his or her list of publications. Google™ is great for discovering this, and we also have plagiarism-detection software that indexes about 37,000 journals. You *will* be found out and then will receive a letter indicating that we will *never* accept a submission from you again.
  - ii. The worst kind of such misconduct (about one every month for *CanJPhys*) is copying the work of someone else. This is just as easy to detect.



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In this case the President of the author's university or company will get a letter from us showing the evidence without making any judgement, as the editor cannot act as both "police" and judge in matters external to the journal, and also as the editor would not want to be sued in court over any presumed accusations. Any action arising at the author's institution following receipt of this information is strictly a matter for the authorities at that institution. The authors, of course, get the same letter stating that we will *never* accept a submission from them again.

Such questions of integrity all have consequences for both the authors and for the editors. A few months after accepting the editorship of *CanJPhys* I attended a talk by a former editor of the American Journal of Physics. He told of an irate author who came to his office with a revolver. Luckily, the editor was away from the office and his secretary eventually recovered from the fright. Although I have been threatened with lawsuits after rejecting a paper, and have had angry letters attacking my integrity, impartiality and even my presumed ethnicity, I am glad to say that no such violent incident has ever happened to me.

A paper that is ready for submission must be well organized and written in clear, acceptable English (or either English or French for *CanJPhys*). It must state:

- a. What the problem is that was investigated.
- b. Why it is interesting.
- c. How the study was carried out.

ONLY THEN do you begin to present results.

In an experimental paper, ERROR BARS are essential, along with general statements about the resolution, accuracy and reliability of your measurements. In a theoretical paper you must also indicate confidence limits on your results.

Comparison with previous experimental or theoretical work that motivated your study comes next.

If English or French is not the author's first language, then it is advisable, if not essential, to have a colleague who is a native speaker of the language of your article go over your manuscript.

Writing should be as brief and clear as possible, allowing an informed physicist who is NOT a specialist in the specific sub-field addressed in the paper to understand the work presented.

Grammar and spelling are essential to making your paper understood. For \$9.99 you can buy a copy of "The Elements of Style" by Strunk and White (at Amazon or other booksellers). This will help you learn how to eliminate nonsense and where to put the commas!

In summary, learning to write well, and to know how to navigate the seas of publishing, are essential parts of the education of a 21<sup>st</sup> century physicist. Some graduate programs include courses on this, which may be very helpful. If this is not part of your program, you might want to investigate how and where you could take such a course. It will probably serve you well throughout your career.