How to Write and Publish a Scientific Paper

6th Edition

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CHAPTER 23

How to Write a Review Paper

A reviewer is one who gives the best jeers of his life to the author.
—Anonymous

CHARACTERISTICS OF A REVIEW PAPER

A review paper is not an original publication. On occasion, a review will contain new data (from the author’s own laboratory) that have not yet appeared in a primary journal. However, the purpose of a review paper is to review previously published literature and to put it into some kind of perspective.

A review paper is usually long, often ranging between 10 and 50 published pages. (Some journals now print short “minireviews.”) The subject is fairly general, compared with that of research papers. And the literature review is, of course, the principal product. However, the really good review papers are much more than annotated bibliographies. They offer critical evaluation of the published literature and often provide important conclusions based on that literature.

The organization of a review paper usually differs from that of a research paper. The Introduction, Materials and Methods, Results, Discussion arrangement generally has not been used for the review paper.

141
However, some review papers are prepared more or less in the IMRAD format; for example, they may contain a Methods section describing how the literature review was done.

If you have previously written research papers and are now about to write your first review paper, it might help you conceptually if you visualize the review paper as a research paper, as follows. Greatly expand the Introduction; delete the Materials and Methods (unless original data are being presented or you will say how you identified and chose the literature to include); delete the Results; and expand the Discussion.

Actually, you have already written many review papers. In format, a review paper is not very different from a well-organized term paper or literature review section of a thesis.

As in a research paper, however, it is the organization of the review paper that is important. The writing will almost take care of itself if you can get the thing organized.

**PREPARING AN OUTLINE**

Unlike research papers, there is no prescribed organization for review papers. Therefore, you will have to develop your own. The cardinal rule for writing a review paper is **prepare an outline**.

The outline must be prepared carefully. The outline will assist you in organizing your paper, which is all-important. If your review is organized properly, the overall scope of the review will be well defined and the integral parts will fit together in logical order.

Obviously, you must prepare the outline **before** you start writing. Moreover, **before** you start writing, it is wise to determine whether a review journal (or primary journal that also publishes review articles) would be interested in such a manuscript. Possibly, the editor will want to limit or expand the scope of your proposed review or add or delete certain of the subtopics. Or perhaps the journal is already publishing a review on the subject, in which case you should direct your effort elsewhere.

Not only is the outline essential for the preparer of the review, it is also very useful to potential readers of the review. For that reason, many review journals print the outline at the beginning of the article, where it serves as a convenient table of contents for prospective readers.

Also to guide readers, review papers make considerable use of subheadings (which, if an outline is published, correspond to the subjects it lists). For example, the review paper “The Cognitive Neuroscience of Memory Distortion,” by D. L. Schacter and S. D. Slotnick (Neuron 44:149–160, 2004) contains the following subheadings:

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**Introduction**

Distinguishing between True Activation Hypothesis

Neuroimaging of True and Electrophysiological Differentiation

Brain Regions that Support Technology and Neuroimaging

False Recognition and Am Neuroimaging of True and Monitoring and Reduction of Prefrontal Cortex?

False Recognition and Frontal Cortex Recognition

ERP Evidence for a Late Conclusion

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In 2005 Schacter, the senior author, and his colleagues in the National Academy of Sciences, published many review articles and books. The senior author and his colleagues have written on recipients appears at www.nawards.scrier, in the (U.S.) To see some review papers by the senior author, and his colleagues, and search the following:

**TYPES OF REVIEWS**

Before actually writing a review, one must be able to judge the requirements of the journal to which the paper will be submitted. Some journals demand critical reviews; others are more concerned with bibliographic citations. The reader should be aware of the expectations of the journal's readership. The following are general guidelines for preparing a review article:

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By and large, the old-line journals are authoritative and critical evaluative. The following are general guidelines for preparing a review article:
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S. D. Slotnick (Neuron
subheadings:

Introduction
Distinguishing between True and False Memories: The Sensory Re-
activation Hypothesis
Neuroimaging of True and False Recognition
Electrophysiological Differences between True and False Recogn-
ition
Brain Regions that Support False Memories: Clues from Neuropsy-
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False Recognition and Amnesic Patients
Neuroimaging of True and False Recognition
Monitoring and Reduction of False Memories: A Role for
Prefrontal Cortex?
False Recognition and Frontal Lobe Damage
Neuroimaging of Frontal Function during True and False
Recognition
ERP Evidence for a Late Frontal Component
Conclusion

In 2005 Schacter, the senior author of this review paper, received the
National Academy of Sciences Award for Scientific Reviewing, for his
many review articles and books. This award, given in different years to
authors in different fields, has been presented since 1979. Information
on recipients appears at www.nasonline.org/site/PageServer?pagename=
AWARDS_scirev, in the (U.S.) National Academy of Sciences Web site.
To see some review papers by masters, search this site to find recipients
in your field, and then search the literature to find their reviews.

TYPES OF REVIEWS

Before actually writing a review, you also need to determine the re-
quirements of the journal to which you plan to submit the manuscript.
Some journals demand critical evaluation of the literature, whereas others
are more concerned with bibliographic completeness. There are also mat-
ters of organization, style, and emphasis that you should consider before
you proceed very far.

By and large, the old-line review journals prefer, and some demand,
authoritative and critical evaluations of the published literature on a
subject. Many of the “book” series (“Annual Review of,” “Recent
Advances in,” “Yearbook of,” etc.), however, publish reviews designed to
compile and to annotate but not necessarily to evaluate the papers pub-
ished on a particular subject during a defined time period. Some active
areas of research are reviewed yearly. Both of these types of review papers serve a purpose, but the different purposes need to be recognized.

At one time, review papers tended to present historical analyses. In fact, the reviews were often organized in chronological order. Although this type of review is now less common, one should not deduce that the history of science has become less important. There is still a place for history.

Today, however, most review media prefer either “state of the art” reviews or reviews that provide a new understanding of a rapidly moving field. Mainly the recent literature on the subject is catalogued or evaluated. If you are reviewing a subject that has not previously been reviewed or one in which misunderstandings or polemics have developed, a bit more coverage of the historical foundations would be appropriate. If the subject has been effectively reviewed before, the starting point for your review might well be the date of the previous review (not publication date, but the actual date up to which the literature has been reviewed). And, of course, your review should begin by citing the previous review.

**WRITING FOR THE AUDIENCE**

Another basic difference between review papers and primary papers is the audience. The primary paper is highly specialized, and so is its audience (peers of the author). The review paper will probably cover a number of highly specialized subjects in your field, and so the review will be read by many peers. The review paper will also be read by many people in related fields, because the reading of good review papers is the best way to keep up in one’s broad areas of interest. Finally, review papers are valuable in teaching, so that student use is likely to be high. (For these reasons, by the way, you may be more likely to order reprints of a review paper than of a research paper, and you may do well to order more reprints.)

Because the review paper is likely to have a wide and varied audience, your style of writing should be much more general than it need be for a research paper. Jargon and specialized abbreviations must be eliminated or carefully explained. Your writing style should be expansive rather than telegraphic.

**IMPORTANCE OF INTRODUCTORY PARAGRAPHS**

Readers are much influenced by the Introduction of a review paper. They are likely to decide whether to read further on the basis of what they find in the first few paragraphs (if they haven’t already been repelled by the title).

Readers are also influenced by the section of a review, deciding whether to skip a section depending on what they think the paragraphs are well written, all skippers, will be able to achieve.

**IMPORTANCE OF CONCLUSIONS**

Because the review paper covers a form of “conclusions” is a good start. Doing so is especially important for obscure subjects. Painful summary is really trying to summarize a difficult topic. Yet, good summaries do find their way into textbooks and journals.
Readers are also influenced by the first paragraph of each major section of a review, deciding whether to read, skim, or skip the rest of the section depending on what they find in the first paragraph. If “first paragraphs” are well written, all readers, including the skimmers and skippers, will be able to achieve some comprehension of the subject.

**IMPORTANCE OF CONCLUSIONS**

Because the review paper covers a wide subject for a wide audience, a form of “conclusions” is a good component to take the trouble to write. Doing so is especially important for a highly technical, advanced, or obscure subject. Painful compromises must sometimes be made if one really tries to summarize a difficult subject to the satisfaction of both expert and amateur. Yet, good summaries and simplifications will in time find their way into textbooks and mean a great deal to students yet to come.

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**RAGRAPHS**

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