The “Art” of Writing a Scientific Paper

Sverre Holm
Journal Publications

Publications at Conferences

1. V. Pandey, S. P. N. publication.
2. W. Zhang and S. H.
4. S. Holm, "Pandemic Matlab code.
5. T. Dahl, J. Eako, H.
9. S. Holm, C. Matlab code.
14. S. Holm, S. P. N. Computers & Mail
15. S. P. Nasholin and
17. F. Prieur, G. Vilem operator, "Journ. A
18. S. Meh dizadeh, A. Acoustically Hard
20. F. Prieur, S. P. N. Simulations, IEEE
Different perspectives on writing

Writer’s perspective

- Abstract
- Introduction
- Theory
- Methods and Materials
- Results
- Discussion
- Conclusion
Different perspectives on writing

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GEOLOGICAL NOTES

A SCRUTINY OF THE ABSTRACT, II

KENNETH K. LANDES
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ABSTRACT

A partial biography of the writer is given. The inadequate abstract is discussed. What should be covered by an abstract is considered. The importance of the abstract is described. Dictionary definitions of "abstract" are quoted. At the conclusion a revised abstract is presented.

For many years I have been annoyed by the inadequate abstract. This became acute while I was serving a term as editor of the Bulletin of the American Association of Petroleum Geologists. In addition to returning manuscripts to authors for rewriting of abstracts, I also took 30 minutes in which to lower my ire by writing, "A Scrutiny of the Abstract." This little squib has had a fantastic distribution. If only one of my scientific outpourings would do as well! Now the editorial board of the Association has requested a revision. This is it.

The inadequate abstract is illustrated at the top of the page. The passive voice is positively screaming at the reader! It is an outline, with each item in the outline expanded into a sentence. The reader is told what the paper is about, but not what it contributes. Such abstracts are merely overgrown titles. They are produced by writers who are either (1) beginners, (2) lazy, or (3) have not written the paper yet.

To many writers the preparation of an abstract is an unwanted chore required at the last minute by an editor or insisted upon even before the paper has been written by a deadline-bedevelled program chairman. However, in terms of market reach, the abstract is the most important part of the paper. For every individual who reads or listens to your entire paper, from 10 to 500 will read the abstract.

If you are presenting a paper before a learned society, the abstract alone may appear in a pre-convention issue of the society journal as well as in the convention program; it may also be run by trade journals. The abstract which accompanies a published paper will most certainly reappear in abstract journals in various languages, and perhaps in company internal circulars as well. It is much better to please than to antagonize this great audience. Papers written for oral presentation should be completed prior to the deadline for the abstract, so that the abstract can be prepared from the written paper and not from raw ideas gestating in the writer's mind.

My dictionary describes an abstract as "a summary of a statement, document, speech, etc. . . ." and that which concentrates in itself the essential information of a paper or article. The definition I prefer has been set in italics. May all writers learn the art (it is not easy) of preparing an abstract containing the essential information in their compositions. With this goal in mind, I append an abstract that should be an improvement over the one appearing at the beginning of this discussion.

ABSTRACT

The abstract is of utmost importance, for it is read by 10 to 500 times more people than hear or read the entire article. It should not be a mere recital of the subjects covered. Expressions such as "is discussed" and "is described" should never be included! The abstract should be a condensation and concentration of the essential information in the paper.
Abstract 1

A partial biography of the writer is given. The inadequate abstract is discussed. What should be covered by an abstract is considered. The importance of the abstract is described. Dictionary definitions of "abstract" are quoted. At the conclusion a revised abstract is presented.

Landes, The scrutiny of the abstract, 1966
The inadequate abstract

• The passive voice is screaming at the reader!
• It is an outline, with each item in the outline expanded into a sentence.
• The reader is told what the paper is about, but not what it contributes.
• They are produced by writers who are either (1) beginners, (2) lazy, or (3) have not written the paper yet.
• Looks like an abstract prepared as an unwanted chore required at the last minute

Landes, The scrutiny of the abstract, 1966
Abstract 2

The abstract is of utmost importance, for it is read by 10 to 500 times more people than hear or read the entire article. It should not be a mere recital of the subjects covered. Expressions such as 'is discussed' and 'is described' should never be included! The abstract should be a condensation and concentration of the essential information in the paper.

Landes, The scrutiny of the abstract, 1966
Scrubtny of the introduction

1995 Jon Claerbout

• The introduction should be an invitation to readers to invest their time reading it.

• Typically this invitation has three parts
  1. The review
  2. The claim
  3. The agenda

• In the claim the author should say why the paper's agenda is a worthwhile extension of its historical review.

Claerbout, The scrutiny of the Introduction, 1995
2) The claim

- The most important part of the introduction
- If you are writing a doctoral dissertation or an article for a refereed journal, then you should be making a new contribution to existing knowledge.
- Your paper is *not acceptable* without an identifiable claim.

Claerbout, The scrutiny of the Introduction, 1995
1) The review

• 3-10 papers providing a background to your research and where you say something about each of them.

• Where intelligence and skill are required is in organizing the review so that it leads up to something, namely, to your claim.

Claerbout, The scrutiny of the Introduction, 1995
3) The agenda

• It summarizes what you will show the reader as your paper progresses. Your agenda will be dull if it is merely a recital of the topics you will cover.
• Your agenda should tell how your paper works to fulfill your claim. In this way your agenda should clarify your claim.
• Keep it short.
• Many more people will begin reading your paper than will finish reading it. Motivate them to finish!

Claerbout, The scrutiny of the Introduction, 1995
• Be careful of demeaning words like "obviously", "clearly", or "undoubtedly."

• There is nothing more frustrating than reading a paper that alludes to something "obvious" that you are completely confused about.
Physical Review Letters

Bridging Three Orders of Magnitude: Multiple Scattered Waves Sense Fractal Microscopic Structures via Dispersion

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\[
p_{\text{scattered}} \propto \omega r_f^{D-1} \Gamma(d_f-D+1) \left[ 1 + (\omega r_f)^2 \right]^{(D-d_f-1)/2} \times \sin \left[ \left( d_f - D + 1 \right) \tan^{-1}(\omega r_f) \right] \\
+ \frac{\omega r_f^2}{1 + (\omega r_f)^2} - \frac{\omega r_M^2}{1 + (\omega r_M)^2}.
\]

Fig. SM 2 Magnetic Resonance Elastography set up. (a) Perspective view of the experimental setup.
“What good will it be for someone to gain the whole world, yet forfeit their soul?”

Jesus Christ
• Write with a reader’s perspective in mind

• A scrutiny of the abstract, Landes, 1966:
  – The abstract is of utmost importance, for it is read by 10 to 500 times more people than hear or read the entire article.

• A scrutiny of the introduction, Claerbout, 1995:
  – In the claim the author should say why the paper's agenda is a worthwhile extension of its historical review.

• http://blogg.uio.no/mn/ifi/innovasjonsteknologi/content/the-art-of-writing-a-research-paper
The art of writing a research paper
Skrevet av Sverre Holm man, 02/07/2012 - 11:11

This title is on purpose a bit misleading because writing a good paper is not really an art provided that you have quality results from your research. Getting such results however may be compared to art. I would instead say that writing a paper is a craft and that it is best learnt through practice.

Here are some tips that I have picked up over the years after having been involved in writing more than a hundred and fifty papers, having been a reviewer for several journals, and after some years of

Kunsten å skrive en forskningsartikkel
Skrevet av Sverre Holm ons, 01/09/2010 - 09:00

Tittelen er med vilje litt misvisende for det å skrive en god artikkel er ikke egentlig noen kunst hvis du har et godt forskningsresultat. Det er det å få det som kan være en kunst. I stedet vil jeg si at det å skrive godt er et håndverk som best læres gjennom øvelse.

Her er noen tips som jeg har plukket opp gjennom årene etter å vært med på å skrive mer enn 150 artikler, etter å ha vært reviewer for forskningsartikler长期以来。