

Style in Cited References

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In most matters related to journal format and presentation, diversity and idiosyncrasy are desirable. For example, journals can be easily distinguished from one another by creative typography and design. However, certain aspects of journal publication are amenable to international standardization. Such things as contents page format, authors' addresses, and cited reference style are easily standardized. And their standardization would offer significant benefits to readers and authors alike. Having suggested guidelines for contents page format¹ and authors' addresses² earlier, I've been acutely aware that a discussion of references was long overdue.

A cited reference should contain enough information to enable the reader to understand why it is being cited. This means it ought to contain the title of the cited work. References ought to be complete enough so that one can retrieve the document with minimum stress. These two objectives are rather straightforward. Consequently, one might think that the format and style of cited references would be

fairly standardized by now. But this is far from the reality.

The reference styles used by scientific journals—even those in the same discipline—vary widely. In the social sciences, the main differences between competing journals are often apparent in their obsession with style rather than content. Even the many so-called “standard” style guides are quite diverse in recommended reference styles.

Consider authors' names, for example. Most style manuals recommend full *last* names, and first and middle initials. Some, like the Harvard University Press manual,³ allow full first names or first initials. But the Modern Language Association's *MLA Style Sheet*⁴ recommends full *first* names. Even those styles that insist on first initials instead of full first names present the initials in various ways. The University of Chicago Press *Manual of Style* recommends placing initials before the last name.⁵ But the European Life Science Editors (ELSE) recommend that initials be placed *after* the surname.⁶

The treatment of cited references

with multiple authors is also inconsistent. For example, the *Journal of the American Medical Association (JAMA)* separates the names of different authors with commas. But *JAMA* omits the period after authors' initials. *Nature* and many other journals use a period after each initial, and use an ampersand to separate the name of the last of several authors.

All such matters may seem like trivialities, but scientists and their assistants spend an inordinate amount of time dealing with such vagaries. And inconsistencies inevitably lead to errors and wasted time and money.

Journals disagree on where to cite the year of publication. A good case can be made for each of the two most common practices. *The Journal of the American Chemical Society (JACS)* places the year in parentheses at the end of the reference. Thus a typical reference in *JACS* looks like this:

J.A. Berson, L.D. Pedersen, and B.K. Carpenter, *J. Am. Chem. Soc.* **98**, 122 (1976).

However, *Proceedings of the National Academy of Sciences (PNAS)* and most biochemistry journals place the cited year immediately after the authors' names:

Blume, A. J., Dalton, C. & Sheppard, H. (1973) *Proc. Nat'l Acad. Sci. USA* **70**, 3099-3102.

In fact, the American Chemical Society's *Handbook for Authors* recommends *both* these styles for various ACS journals.⁷ ISI[®] also

uses both these methods. In the *Citation Index* section of the *Science Citation Index[®] (SCI[®])* the year of publication follows the cited author's name. But in the *Source Index* we place the year at the end of the full citation. To my knowledge this has not caused confusion to users; rather it helps distinguish the cited from the citing entry.

One can also find significant variations in the treatment of pagination. *Nature* gives the inclusive page numbers:

Wheeler, A.M. & Hartley, M.R.
Nature **257**, 66-67 (1975).

However, *Physical Review* and many others provide only the first page:

R. P. Feynman and M. Gell-Mann, *Phys. Rev.* **109**, 193 (1958).

Since this practice is so widespread, we have been forced to use the first page only in our *Citation Indexes*, but in the *Source Indexes* full pagination is provided.

Unless boldface or underlining is used to distinguish the volume or year from the cited page, they are frequently confused with one another. Four-digit page numbers beginning with 19 are often confused with the year of publication. This problem is compounded by those journals which do not use a volume number at all. Yet another variation is to cite the volume followed by the year and then the page! While life scientists or physicists may not encounter this format very often, it is not unusual

in social science journals.

Clearly an international standard for reference formats would benefit everyone involved in scientific and scholarly communication. If such a standard were universally adopted, authors would no longer need to change their reference style for each journal they publish in. Manuscripts could be submitted or re-submitted to different journals without extensive revisions. Readers would benefit by a uniform style, and librarians could save countless hours in tracking down elusive references. There is no doubt that the work of ISI and other information processing organizations would also be simplified.^{8,9} These efficiencies could then be translated into real user benefits.

One group has produced a viable reference standard. The American National Standards Institute (ANSI) is a nonprofit organization of 1025 members representing US government agencies, trade associations, technical societies, consumer groups, and industry. ANSI serves as a national clearinghouse for voluntary safety, engineering, and industrial standards, including definitions, terminologies, symbols, and abbreviations. It recently published a booklet called *American National Standard for Bibliographic References*,¹⁰ which recommends reference style for a variety of print and nonprint materials.

Lest we be accused of scientific imperialism, I can assure our non-US readers that ANSI is affiliated with the International Organization

for Standardization (ISO). Unfortunately, the ISO last proposed an international reference standard for serials and monographs in 1968.¹¹ This outdated standard, which is now being revised, differs from the new ANSI standard mainly in the location of the date of the cited item. Although ISO placed the date of a serial *between* the volume and paging, ANSI more sensibly places the date *after* the volume, issue, and page numbers. In addition to its similarity to the ISO's standard, the ANSI standard for bibliographic references also encompasses many of the concepts being developed by groups such as the International Federation of Library Associations and UNESCO.

The American Society for Information Science adopted ANSI's style for all ASIS publications in January 1978. The American Chemical Society and the Council of Biology Editors also plan to adopt this style, with some minor variations.

ANSI has produced two formats for references. The *abbreviated* form contains only the shortened journal title, volume, first page number, and year of publication.

ANSI recommends the use of its abbreviated style only when saving space is a major concern. In my opinion it is an unacceptable condensed form in *any* situation, mainly because it omits authors' names. From the librarian's viewpoint there are numerous occasions when two or more items start on the same page in a journal. This applies to letters, editorials and other brief

communications. It is folly to leave out the author's name, because this information is critical to even a minimal evaluation of the reference. Its omission forces the citing author to mention the author's name in the text. One might not even recognize one's own work if cited simply by journal!

ANSI's *comprehensive* form comes closer to an ideal reference style for journal articles. It includes the author's name and article title along with all the other key bibliographic elements. For serials, either the full journal title or a condensed title may be used. There are also some superfluous, or "optional" elements. For a typical journal article, the ANSI format looks like this:

Downer, Nancy W; Englander, S. Walter. Hydrogen exchange study of membrane-bound rhodopsin. *Journal of Biological Chemistry* 252 (22): 8101 - 1804; 1977 November 25.

ANSI's comprehensive reference style for journal articles and books is similar to the style now used in the references in these essays. There are some differences, however, which deserve explanation.

ANSI permits the use of the author's first name when it is given in the original work, but we prefer to use first and middle initials. This saves space on both the printed page and on computer tape. Some readers complain that initials are not enough. Sometimes their use creates a homograph problem. But even "Smith J," if combined with

other information in the citation, is invariably enough to uniquely identify a document.¹²

The universal use of first names would, however, resolve most homograph problems in large-scale compendia such as the *Science Citation Index*. The homograph problem does not occur when one is simply interested in learning who has cited a particular paper. Rather, homographs are a problem when one wants to ascertain quickly how often a particular author has been cited. The full bibliography of the author is often needed to differentiate two or more authors with the same last name and initials.

Most of our other modifications of the ANSI standard are also meant to save space. ANSI repeats digits when indicating inclusive pagination (193-198), but we eliminate repetitive digits (193-8). ANSI writes a date as 1978 March 13, but we write 13 March 1978. In this respect, we use the European rather than the American convention. Since the year is the most important part of the date, placing it at the end gives it added emphasis and visibility. ANSI also recommends that the journal issue number (in parentheses) immediately follow the journal volume number. We follow this practice in the *SCI*, but in *Current Contents*[®] (*CC*[®]) essays we only use issue numbers when the journal is being cited in the same year it appeared, or if its pages are not continuously numbered throughout a volume, as, for example, in *Chemical & Engineering News*.

Finally, there is a unique reason for our failure to use volume numbers when we cite *Current Contents* essays. There are six different editions of *CC*. Each carries a different volume number because they were started at different times. However, the weekly issue numbers are the same for all editions of *Current Contents*. Therefore, in referring to these essays only the issue number, in parentheses, is used. Some readers are not aware that the weekly essay and ISI Press Digest are printed in all six editions.

As indicated previously, some journals, such as the *British Journal of the Chemical Society (JCS)* and *Tetrahedron Letters*, don't have volume numbers. A citation in *JCS* to an earlier article in that journal might read as follows:

J. Smith, *J. Chem. Soc.*, 1971, 1972.

Which is the year and which is the page? According to ANSI, 1971 should be the page. But in *JCS* 1971 is the year. I hope that the few journals which still create this irritating source of ambiguity adopt volume numbers very soon. If not, the use of *inclusive* pagination would eliminate most confusing situations. This would also tell the reader how long the article is.

One of the most important style elements recommended by ANSI concerns the article title. That so many reputable journals persist in dropping article titles in references is frustrating indeed. *Science* and *Nature* are well-known offenders, but there are many others. It is true that this saves space. But editors

should realize that a significant cost is passed on to the reader in the form of inconvenience, incomprehension, and wasted time. We are all forced to complete the citation for one reason or another. And eventually librarians suffer the most. Without the title the reader can never be sure of the specific subject matter of the cited article.¹³ Titles are also useful for many interlibrary loan requests.

Lest readers think that inclusion of titles benefits ISI, remember that we do not use or need titles to prepare the *Citation Index* section of the *Science Citation Index*. In fact, titles get in the way of processing citations, so their use adds to our costs. (Titles for the *Source Index* are picked up when we process the original papers—not from cited references.) Nevertheless, we recommend that titles always be used in references.

For books, the ANSI abbreviated form includes author's name, title, place of publication, publisher and year of publication. The only item the comprehensive form adds to the abbreviated form is the number of pages. Including the number of pages gives the reader a rough idea of the scope and size of the work. It aids librarians enormously.

Incidentally, some readers may wonder why some journal and book titles are not italicized in the examples given above. For the sake of simplicity, ANSI recommends a single typeface for all bibliographic elements, but does not object to the use of italics, boldface, or underscoring.

Figure 1 shows examples of ANSI's comprehensive style for selected types of materials. In addition to the examples shown, ANSI also suggests specific styles for referring to trade and serial catalogs, brochures, unpublished supplemental materials, maps, motion pictures, slides, videorecordings, pictures, computer programs, magnetic tapes, computer data bases, and even antique cylinder sound recordings.

The ANSI booklet does not specify where the references should be placed. I think they belong in a

single list at the end of the article.¹⁴ References should be indicated with a superscript or a number in parentheses in the text. The full reference list should be placed at the end of the article in numerical order. This makes it easier to locate relevant passages.

ANSI also does not specify whether titles in references should be translated from the original language. The most important consideration here is precision. Since translation of bibliographic elements can lead to uncertainties in the translated form, references

Figure 1. The following examples illustrate the American National Standard Institute's (ANSI's) comprehensive style (minus optional elements) for bibliographic references.

Journal Article:

Silverberg, Michael; Marchesi, Vincent T. The anomalous electrophoretic behavior of the major sialoglycoprotein from the human erythrocyte. *Journal of Biological Chemistry* 253(1):95-98; 1978 January 10.

Monograph:

Heilbrun, James. *Urban economics and public policy*. New York: St. Martin's Press; 1974. 380 p.

Book Chapter:

King, J.S. Neutron scattering from polymers. Allen, G.; Petrie, S.E.B., eds. *Physical structure of the amorphous state*. New York: M. Dekker, Inc.; 1976:13-25.

Conference Proceedings:

Fraser, R.D.B. The structure of fibrous proteins. Walton, A.G., ed. *Proceedings of the first Cleveland symposium on macromolecules*; 1976 October 11-15; Cleveland, OH. Amsterdam: Elsevier Scientific Publishing Co; 1977:1-21.

Report:

Robert, D.A. Review of recent developments in the technology of nickel-base and cobalt-base alloys. Columbus, OH: Battelle Memorial Institute, Defense Metals Information Center; 1961 August 4; DMIC memorandum 122. 2 p. Available from: NTIS, Springfield, VA; AD 261292.

should always be in the language of the original work. But for the sake of convenience, an English translation may be provided in brackets.

In a multi-authored book a single chapter is analogous to an article in a journal. It ought to be cited separately, as ANSI recommends (see Figure 1).

When repeated reference to a book or article is required, terms like "ibid." or "op. cit." should be avoided. They are frequently ambiguous and take up a lot of space. If a book or an article is cited several times you should list the

work once in the bibliography but cite the specific page numbers in parentheses within the text. I think this would be a great time-saver, especially in chemical libraries. A particular page of an article can be legitimately cited for a datum like a melting point. Unfortunately, this is often done without giving the complete pagination of the article cited. Thus one can not be sure how to order a copy of the article from the library.

Placing notes, comments, or additional explanations in cited references is usually confusing,

Figure 1 (continued)

Unpublished Paper:

Feast, M.W.; Garton, W.R.S. The Schumann-Runge bands of O₂ in emission and absorption in the quartz ultraviolet region. 1950. Unpublished draft supplied to author by W.R.S. Garton.

Dissertation or Thesis:

Cairns, R.B. Infrared spectroscopic studies of solid oxygen. Berkeley, CA: Univ. of California; 1965. 156 p. Dissertation.

Newspaper Article:

Robinson, Eugene. A report on new vaccines for 3 diseases. San Francisco Chronicle. 1978 January 20:20.

Letter:

DeRussy, R.E., Lieut. Col. [Letter to Brevet Gen. J.G. Totten]. 1853 May 15. 1 leaf. Located at: National Archives, Washington, DC; Record Group 77.

Patent Document:

Harred, John F; Knight, Allan R; McIntyre, John S., inventors; Dow Chemical Co., assignee. Epoxidation process. U.S. patent 3,654,317. 1972 April 4. 2 p.

Photograph:

Haas, Ernst. A man-made span [Photograph]. The best of Life. New York: Time-Life Books, ©1973; [p. 150]; 35 × 27 cm.

Printed Music:

Tchaikovsky, Peter Ilich. The swan lake ballet: op 20 [Score]. New York: Broude Brothers; [1951] (B.B. 59). vi. 685 p.

time-consuming and costly. References should only include works cited. In most cases I have found that extensive footnotes could just as easily be part of the text.¹⁵ If not they should become true footnotes at the bottom of the page.

Almost everyone agrees on the value of good style in scientific writing.¹⁶ But we should remember that the characteristics of clear writing also apply to clear references. The adoption of ANSI's

style, with or without *Current Contents'* modifications, would benefit all concerned. A summary of the ANSI style recently appeared in the *Journal of the American Society for Information Science*.¹⁷ Or you can get a copy of the *American National Standard for Bibliographic References* (ANSI-Z39.20-1977) for \$11.50 from ANSI, Inc., 1430 Broadway, New York, NY 10016; (212) 354-3300.

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*Reprinted in Garfield E. *Essays of an information scientist.* Philadelphia: ISI Press, 1977. 2 vols.