

# Current Comments®

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## The Integrated *Sci-Mate* Software System. Part 2. The *Editor* Slashes the Gordian Knot of Conflicting Reference Styles

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Recently I told you about the new version of the *Sci-Mate*® Software System.<sup>1</sup> I reviewed the improvements we introduced to the *Sci-Mate Searcher* and *Sci-Mate Manager* components. The *Searcher* is a menu-driven, "gateway" program that allows you to search numerous databases mounted on several large commercial vendors without requiring knowledge of their command languages. The *Manager* helps you organize, search, and retrieve textual and bibliographic information, including research and lab notes, correspondence, addresses, reprints, patient records, slides, photographs, and equipment. For Version 2.0, we have added a third component—the *Sci-Mate Editor*. The *Editor* allows you to automatically generate and reformat bibliographic references in both the text and bibliography of a manuscript to the required specifications of practically any journal.

Samuel Johnson observed that "the joy of life is variety."<sup>2</sup> But the bewildering variety of reference styles required by different journals affords most authors little joy. When we launched the *Science Citation Index*® (*SCI*®), ISI®'s Irv Sher, director of development and quality control, identified over 250 different reference styles. A study by Maeve O'Connor of the Ciba Foundation found that a sample of 52 scientific journals used 33 different reference styles.<sup>3</sup> In a less complex world, journal editors would agree upon a universal system for references. Until that day, I will continue to preach the gospel of uniform

reference styles, as I have in the past.<sup>4,5</sup> The success of the "Vancouver" style, advanced by the International Committee of Medical Journal Editors,<sup>6</sup> indicates we are making progress toward uniform standards. In the meantime, the scientific literature continues to grow amid a Babel of reference languages.

The intellectual effort of writing a journal article is sufficiently taxing by itself. Paging through an earlier issue of the journal or trying to locate the journal's guide on reference style is both time-consuming and annoying. If your paper is rejected, you face more empty hours of editing your references to the style of the next journal to which the manuscript will be submitted.

Editing references is a tedious task, as any author, typist, or copy editor knows only too well. Consider a relatively simple change, such as inverting the author's initials and surname. If you use the word-processing program WordStar, this requires no fewer than seven separate operations for each name and, of course, a reference can have more than one name. If your paper includes 50 or more references, this is no trivial task.

The *Editor*, our word-processor "extender," eliminates most of the drudgery of editing references. With only a few keystrokes, the *Editor* generates your references according to the style you select or changes them to another style. We designed the *Editor* as an expert bibliographer: it knows the proper form and punctuation you need for nearly every type of cited document. It comes to you

with 15 preprogrammed reference style sheets (see Table 1). Furthermore, you can modify those provided or create your own.

Alexander the Great used a sword to slash the intricately tied knot of King Gordius; you can use the *Editor* to cut through the morass of conflicting reference styles.

### Templated Records

Before you can generate or reformat a bibliographic reference, you must store its parts in a record so that the computer can manipulate those parts to produce the desired output. Each piece of bibliographic data (author, title, source, volume, page(s), year, and so on) is assigned to a separate field in the record. The template specifies the number of fields and the name of each field.

You should think of the template as the lexical component of a generative grammar that assigns "parts of speech" to the words and phrases of the sentence. A templated record is illustrated in Figure 1. This template, named DOCUMENT, specifies 19 fields. Note that not every field needs data supplied for any one record. Once the bibliographic data of a reference are broken down into fields (specified by the template), you can reformat the reference as often as you wish *without ever typing the information again*.

### Style Sheets

Whereas a template categorizes the internal components of a bibliographic record, a style sheet determines its external appearance. After you select a style sheet, the *Editor* transforms the record to the appropriate reference style. This will vary according to the type of document cited: references to books will appear in one form, those to journal articles in another, and so on. The style sheet you select knows the right combination of rules for different types of doc-

**Figure 1:** Example of bibliographic information held in the DOCUMENT template.

BIBLIOGRAPHY File Accession Number 23

Author	Sluzki, C., E.; Beavin, J.
Title	Symmetry and complementarity: An operational definition and a typology of dyads
Source	The Interactional View
Volume	
Page(s)	71-87
Year	1977
Date	
Series	
Issue	
Part	
Report	
Edit #	
Ed./Tr.	Watzlawick, P.; Weakland, J., H.
Pub. Co.	Norton
Pub. Loc.	New York
Affil.	
Notes	Reported from Acta Psiquiatrica y Psicologica de America Latina, 1965, 11, 321-330
Crossref	
Role	Eds. and Trans.

uments. The 15 style sheets provided in the program are listed in Table 1. Next to the name for each style sheet is a reference to a journal article in that style, the convention that the style sheet follows, and several journals using that convention.

These 15 style sheets cover the reference styles most frequently encountered in scientific journals. But we have also included style sheets for scholarly journals that follow the conventions of the Modern Language Association (MLA), the American Psychological Association (APA), and the University of Chicago. You can modify the style sheets we provide, delete them, or create your own for specialized needs.

A style sheet consists of both *formats* and *general settings*. A *format* determines the organization, punctuation, spacing, and typography used in the presentation of different types of cited documents. While 50 to 80 percent of the references in most journals are to journal articles, the remaining percentage are to abstracts, articles or chapters in multiauthored works, books, confer-

ence and proceedings papers, government publications, reports, theses, or unpublished documents. The *Editor* can handle these diverse types of documents since each style sheet uses from 6 to 10 formats, corresponding to different document types. When applying a style sheet to a bibliographic record, the *Editor* identifies the document type of the record and generates or reformats the reference according to the appropriate rules for that type of reference.

*General settings* are those specifications that apply to all references, no matter what the document type. Such specifications include, for example, the way the author information is presented (initials or full first and middle names; surname first or last; and use of *et al.* in multiauthored works). Other general settings include margin and indentation instructions and those for spacing between references.

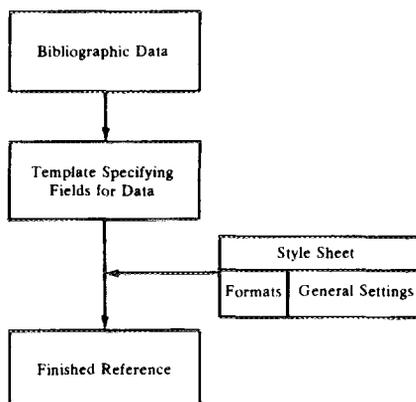
The 15 style sheets are ready to use. You do not have to create your own formats and general settings. However, *Sci-Mate's* menu-driven (or multiple-choice) command system enables you to create formats and general settings for customized style sheets.

A finished reference results from the application of a style sheet to a templated bibliographic record. Figure 2 summarizes this process.

### An Example

Suppose you are preparing an article in which you cite the 1985 paper by W. Mosca, J. Plaja, R. Hubsch, and R. Cedillos on a "Longitudinal study of immune response in human Chagas disease," published in volume 22 of the *Journal of Clinical Microbiology*, pages 438 to 441. By entering the bibliographic information for the article into the DOCUMENT template and invoking the style sheet for the journal *Science*, your reference would appear as follows:

Figure 2: The path to a finished reference in the *Editor*.



1. W. Mosca, J. Plaja, R. Hubsch, R. Cedillos, *J. Clin. Microbiol.* **22**, 438 (1985).

Now suppose you submit your paper to the *New England Journal of Medicine*, which follows the "Vancouver" convention. By invoking the BIOMED style sheet, your reference would then appear as follows:

1. Mosca W, Plaja J, Hubsch R, Cedillos R. Longitudinal Study of Immune Response in Human Chagas Disease. *J Clin Microbiol* 1985; **22**:438-441.

The *Sci-Mate Editor* changed the arrangement and punctuation of author names, supplied the title of the article, changed the punctuation and typography of the journal title, moved the year, added full pagination, and changed the typography of the volume number. Since the title of the article and full pagination were stored in the templated record, you would not have had to hunt for these pieces of information, which were omitted in the *Science* reference.

Suppose you then choose to submit your paper to one of the journals of the American Society for Microbiology. By invoking the style sheet MICROBIO, your reference would then look like this:

1. Mosca, W., J. Plaja, R. Hubsch, R. Cedillos. 1985. Longitudinal Study of Immune Response in Human Chagas Disease. *J. Clin. Microbiol.* 22:438-441.

The differences in reference styles between our first and second examples are greater than those between our second and third. Note the slight changes between the last two in the use of bold type for authors' names, in the punctuation of those names, and in the placement of the year. Just as great changes demonstrate the value of the *Editor*, little ones do, too. In preparing a manuscript, an author is perhaps more likely to overlook such less obvious differences in style. Therefore, not only does the *Editor* save time—it also ensures adherence to style and uniformity of references.

Let me make clear that although the *Editor* is a sophisticated, knowledge-based program, there are some things it doesn't do. For example, it will not insert a term like *ibid.*, *op. cit.*, or *loc. cit.* in your manuscript for repeated sources. However, these can be added with your word-processing program after your references have been generated or reformatted.

#### **Integration with the *Searcher* and *Manager***

Each component of the *Sci-Mate Software System* is designed to work independently. If you have not yet acquired the *Searcher* or the *Manager* components, you can still make full use of the *Editor*. But if you already use the *Searcher* and *Manager*, you'll find that the *Editor* will function in concert with these.

The *Manager's* bibliographic files are accessible to the *Editor* through *Sci-Mate's* work file, the link between all three components. Suppose you are one of the many users who already has extensive bibliographic files in the *Manager*. You can search your files as usual, ex-

tract the references needed for your current paper, and then transfer these records, through the work file, into the *Editor*. Editing your bibliographic files (that is, assigning data to properly coded fields conforming to the DOCUMENT template) will be required before the *Editor* can generate or reformat your references. From now on, when storing bibliographic records in *Manager* files, consider using the DOCUMENT template.

Those of you who use the *Searcher* to download bibliographic records from SCISEARCH® or from other online databases (when this is permitted by the supplier) can import these records to the *Editor* through the system's work file. Again, some offline editing of downloaded records will be required to template the references for use by the *Editor*; the extent of editing varies with the database you use. For example, one database may treat the journal title, volume number, issue number, and date as one unit. The *Editor's* template structure requires you to separate each "morpheme" of a reference and to place it in its own field.

#### **References Within Manuscripts**

The *Editor* allows you to incorporate references into the text of your manuscript. In preparing your manuscript on a word-processing system, you can insert markers at the places you want your in-text references to appear. These markers consist of an opening parenthesis, an asterisk or exclamation point (for an abbreviated or full citation, respectively), and a numeric or alphanumeric pointer (referring to a specific bibliographic record). Then, after you merge your manuscript (including markers) with your file of references, all markers are replaced by a reference number, an author-date reference (such as Jones 1956b), an alphanumeric key, or a full reference, depending upon the requirements of the publisher.

### Sorting Bibliographies

Once in-text markers are inserted in the manuscript, you can sort the references in the bibliography by the order in which they are cited. This feature allows you to add references throughout the text without laboriously reordering and renumbering each reference. On the other hand, the *Editor* can also sort your bibliography alphabetically by author and, under each author entry, it can order references chronologically, latest to earliest or vice versa.

### Initial Response to the *Editor*

I have been able to give you only a glimpse of the *Editor's* versatility. Demonstrations showing the same bibliographic record displayed and printed in numerous reference styles have impressed some very experienced copy editors. Before designing the *Editor*, we reviewed the capabilities of other software for bibliographic editing and determined that we could and should go beyond anything available. And before we released the *Editor*, many scientists and information specialists throughout the US tested the program and helped us refine it. In most cases users were impressed with the sophistication of the program.

Published reviews of the efficacy of the *Editor* have not as yet appeared, owing to the program's recent release. I can, however, pass along a few of the many enthusiastic comments of those who tested the *Editor*. Steven Goddard, research associate, Agricultural Products Department, DuPont Experimental Station, Wilmington, Delaware, and a long-time *Sci-Mate* user, puts his finger on the major advantage of the *Editor*: "I won't have to spend hours rearranging fields, removing punctuation, implementing underlining, and eliminating useless text. This can now all be done by the *Editor*." Mary Engle, Division of Library Automation, University of Cali-

fornia, Berkeley, remarks on the program's "ability to change references in a thesis with ease" and its "uniformity of the output—less chance of errors." She also mentioned the superior quality of the *Editor's* user interface.

Our experience in processing millions of citations over 25 years inspired us to make the *Editor* the knowledge-based citation manager it is. The *Editor* will be indispensable to all who frequently face the tedious task of preparing, editing, and reformatting bibliographies and in-text references.

### Support for Users of the *Editor*

As with our other *Sci-Mate* components, the *Editor* is delivered with an excellent manual that includes a tutorial for the beginner and detailed documentation of each feature for the initiated. Time taken in the tutorial to learn the *Editor's* full range of capabilities is well rewarded by the ease and speed with which you will be able to prepare and edit your manuscripts.

For more information about the *Sci-Mate Software System*, call *Sci-Mate Customer Service* at 1-800-523-4092 or (215) 386-0100, ext. 1418. After business hours or on weekends, you may leave a recorded message. Readers in Europe can contact our UK office at 132 High Street, Uxbridge, Middlesex UB8 1DP, UK; telephone: 44-895-30085; or telex: 933693 UKISI.

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**Table 1:** The *Editor's* 15 style sheets. Beside the name of each style sheet is a journal-article reference in that style, the convention that the style sheet follows, and a select list of journals following that convention.

STYLE SHEET	EXAMPLE OF JOURNAL-ARTICLE REFERENCE	CONVENTION	SELECTED JOURNALS
1 ACADEMY	2 Stepanoff, K. D.; Pedlev, T. J.; Lawrence, C. J.; & Secomb, T. W. (1983) <i>Nature</i> <b>305</b> , 692-695.	Information for contributors. <i>Proc. Nat. Acad. Sci. USA</i> 81(1):i-viii, 1984	<i>Proc. Nat. Acad. Sci. USA</i>
2 ANSI	Stepanoff, K. D.; Pedlev, T. J.; Lawrence, C. J.; et al. Fluid flow along a channel with an asymmetric oscillating constriction. <i>Nature</i> . 1983 20 October: 305: 692-695.	American National Standards Institute. <i>American national standard for bibliographic references</i> . Z39.29-1977. New York: ANSI, 1977. 92 p.	Many journals use this convention as the basis for their reference styles, but depart from it in certain details. <i>Editor</i> users should modify this style sheet for specific journals.
3 BIOCHEM	2 Stepanoff, K. D. et al. (1983) <i>Nature</i> <b>305</b> , 692-695.	IUB Commission of Editors of Biochemical Journals. <i>Biochem. J</i> 135:1-3, 1973 -OR- <i>J. Biol. Chem.</i> 248:7279-80, 1973	<i>Biochem. J.</i> ; <i>J. Biol. Chem.</i>
4 BIOLOGY	2 Stepanoff, K. D.; Pedlev, T. J.; Lawrence, C. J.; Secomb, T. W. Fluid flow along a channel with an asymmetric oscillating constriction. <i>Nature</i> 305(20 October): 692-695. 1983	CBE Style Manual Committee. <i>CBE Style Manual</i> . Bethesda, MD: Council of Biology Editors, 1983. 324 p.	Many journals use this convention as the basis for their reference styles, but depart from it in certain details. <i>Editor</i> users should modify this style sheet for specific journals.
5 BIOMED (Vancouver)	2 Stepanoff KD, Pedlev TJ, Lawrence CJ, Secomb TW. Fluid flow along a channel with an asymmetric oscillating constriction. <i>Nature</i> 1983; 305:692-695.	International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals. <i>Ann. Intern. Med.</i> 96(Part 1): 766-71, 1982.	<i>N. Engl. J. Med.</i> ; <i>Ann. Intern. Med.</i> ; <i>Lancet</i>
6 CHEMICAL	2. K. D. Stepanoff, et al. <i>Nature</i> <b>1983</b> , 305, 692-695.	American Chemical Society. <i>Handbook for authors</i> . Washington, DC: ACS, 1978. 122 p.	<i>J. Amer. Chem. Soc.</i> and all American Chemical Society journals.
7 CHICAGO	Stepanoff, K. D.; et al. 1983. Fluid flow along a channel with an asymmetric oscillating constriction. <i>Nature</i> 305:692-695	<i>University of Chicago. A manual of style</i> . Chicago: University of Chicago Press, 1969. 546 p.	Many University of Chicago journals

STYLE SHEET	EXAMPLE OF JOURNAL-ARTICLE REFERENCE	CONVENTION	SELECTED JOURNALS
8. ENGINEER	[2] K. D. Stepanoff, T. J. Pedlev, C. J. Lawrence, and T. W. Secomb. "Fluid flow along a channel with an asymmetric oscillating constriction." <i>Nature</i> , vol. 305, pp. 692-695, 20 October 1983.	Information for IEEE authors. <i>IEEE Spectrum</i> 2:111-5, 1985.	<i>IEEE Spectrum</i> (but not all IEEE journals)
9. MEDICAL (AMA)	2. Stepanoff KD, Pedlev TJ, Lawrence CJ, et al.: Fluid flow along a channel with an asymmetric oscillating constriction. <i>Nature</i> 1983; 305(20 October):692-695.	Barclay W R, Southgate M T & Mayo R W. <i>Manual for authors &amp; editors: editorial style &amp; manuscript preparation</i> . Chicago: American Medical Association, 1981. 184 p.	<i>JAMA—J. Amer. Med. Assn.</i>
10. MICROBIO	2. Stepanoff, K. D., T. J. Pedlev, C. J. Lawrence, and T. W. Secomb. 1983. Fluid flow along a channel with an asymmetric oscillating constriction. <i>Nature</i> 305:692-695.	Instructions to authors. <i>J. Clin. Microbiol.</i> 21(1):i-viii, 1985.	<i>J. Clin. Microbiol.</i> and all American Society for Microbiology journals
11. MLA (Modern Language Assoc.)	Stepanoff, K. D., et al. "Fluid flow along a channel with an asymmetric oscillating constriction." <i>Nature</i> 305 20 October 1983: 692-695.	Gibaldi J & Achtert W S. <i>MLA handbook for writers of research papers</i> . New York: Modern Language Association of America, 1984. 221 p.	<i>PMLA—Publ. Mod. Lang. Assn.</i>
12. NATURE	2. Stepanoff, K. D., Pedlev, T. J., Lawrence, C. J., & Secomb, T. W. <i>Nature</i> 305: 692-695 (1983).	Guide to authors. <i>Nature</i> 305(5936) iv, 1983.	<i>Nature</i>
13. PHYSICS	2. K. D. Stepanoff, T. J. Pedlev, C. J. Lawrence, and T. W. Secomb. <i>Nature</i> 305: 692-695 (1983).	Information for contributors. <i>J. Appl. Phys.</i> 58(12), 1985.	<i>J. Appl. Phys.</i> and all American Institute of Physics journals
14. PSYCH	Stepanoff, K. D., Pedlev, T. J., Lawrence, C. J., & Secomb, T. W. (1983 20 October). Fluid flow along a channel with an asymmetric oscillating constriction. <i>Nature</i> 305: 692-695.	American Psychological Association. <i>Publication manual of the American Psychological Association</i> . Washington, DC: APA, 1983. 208 p.	All American Psychological Association journals
15. SCIENCE	2. K. D. Stepanoff, T. J. Pedlev, C. J. Lawrence, T. W. Secomb. <i>Nature</i> 305: 692 (1983).	Information for contributors. <i>Science</i> 225(4669) xi-xii, 1984.	<i>Science</i>

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