



## Guest Editorial

### How Scholarly Communication Should Work in the 21st Century

Scholarly journals are obsolete as the primary vehicle for scholarly communication. The recent furor over "cold fusion," for example, developed entirely outside the scholarly-journal process.

We need to harness available technologies to reform the entire system of scholarly communication. The \$500-million spent annually on journal subscriptions could finance a new system.

Five years from now, the new system could be a reality—if university presidents, foundation directors, scholars, and librarians choose to create this 21st-century option. Here's how it could work:

Scholars in all disciplines could "publish" their articles on the Scholarly Communication System, an electronic network on which they could also read other publications. As a scholar completed an article or paper, it would be sent electronically to the system, where it would be assigned a category and cross-referenced to other relevant categories. Given the increasingly interdisciplinary nature of much scholarly work, the capacity to alert readers in one subject area to articles published in other areas could help build important links among disciplines.

The system could provide three new capabilities: a "notes and comments" section, citation tracking, and a usage log. Scholars with valid passwords, obtained by paying a modest annual fee, could leave signed statements related to the article's content in the comments field immediately after an article entered the system. The comments could contain suggestions for references to other literature, ideas for clarifying arguments, rebuttals of arguments, notes of possible errors in data or interpretation, and even compliments on the quality of the contribution.

The system would permit such responses to be added only to the comments section. Signatures on signed comments would be checked automatically to assure their validity (through a program matching names with users' authorized numbers).

The new system also would be a valuable communication tool for academics while their research was under way. In the "search only" mode, researchers could seek data from all the content tracks and could gain access to archival as well as to current files. The system would be available 22 hours a day to anyone paying the hourly usage and printing charges, leaving 2 hours of "down" time for maintenance.

After an article had been in the system for six months so that comments could be collected

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and citations monitored, it would be flagged for review. The author would be notified of this via the system, and she or he then would have 10 working days to prepare a final version to submit to the appropriate review board. The author could use all responses from the comments section and information about citation patterns to create a revised version of the article. If the author failed to respond to the review notice, the article would be removed from the system.

Review boards and management groups would be the governing agencies for each scholarly area, with members nominated and elected by participating institutions.

The boards would perform the reviews now undertaken by editors of scholarly journals using the practices considered most equitable and fair: blind reviewing, review by a panel of three scholars in the same field, and written comments supplied to the author. Members of review boards would be given 15 working days to complete their task. They would be required to place an article in one of the following seven categories:

- Original contribution to literature in a field.
- Logical extension of research in a field.
- Application of a theoretical perspective or method developed in one content area to another content area.
- Restatement or interpretation of existing research.
- Review of the status of research on a particular topic.
- Seriously flawed in research design, experimental technique, or conclusion.
- No scholarly contribution.

Thereafter, researchers using the system would be able to use these fields to limit their searches, thereby avoiding paying to retrieve articles they would not use. (Each author would be asked to suggest a category characterizing the "research technique" used for his or her study when it entered the system; the selection would be confirmed by the reviewers.) This feature would permit users to locate studies using particular research techniques in which they were interested—specific analytical procedures or research designs, for example. Such information is difficult to find through the typical indexes now available.

After a review was completed, the article would be sent back to the relevant category in the system. The citation and usage logs would continue, but the comments field would be replaced with a more formal "research note" that could be entered only by scholars with authorized passwords in the relevant field or fields. A correction field would be added that could be used only by the original author. Using technology to combine all communication about a piece of research would result in a cleaner pattern of scholarly communication because errors could be noted more quickly and corrected more easily.

Management groups would supervise each content area, appointing and training review boards, as well as supervising an appeal process for researchers whose work was called "seriously flawed" or "no scholarly contribution" by the original reviewers.

Capital costs for setting up the system could be provided by grants and fees from founding universities, foundations, and government agencies. The management groups and review and appeal panels could be financed by annual fees paid by each academic institution in the United States. The fees would go to pay for selection and training of reviewers, honoraria for reviewers, administrative costs, and other associated expenses. Institutional fees would be assessed on a sliding scale based on each area of doctoral, master's, and undergraduate instruction offered by a college or university.

Hourly usage charges, in conjunction with the basic membership fee paid by each institution, would cover the annual operating costs of the system. Royalty payments would be provided to authors whose articles were printed out on the system. Libraries would print files in formats requested by users, using sophisticated graphics software and color printers to reproduce the digitally stored images, thereby overcoming much of the resistance to electronic journals.

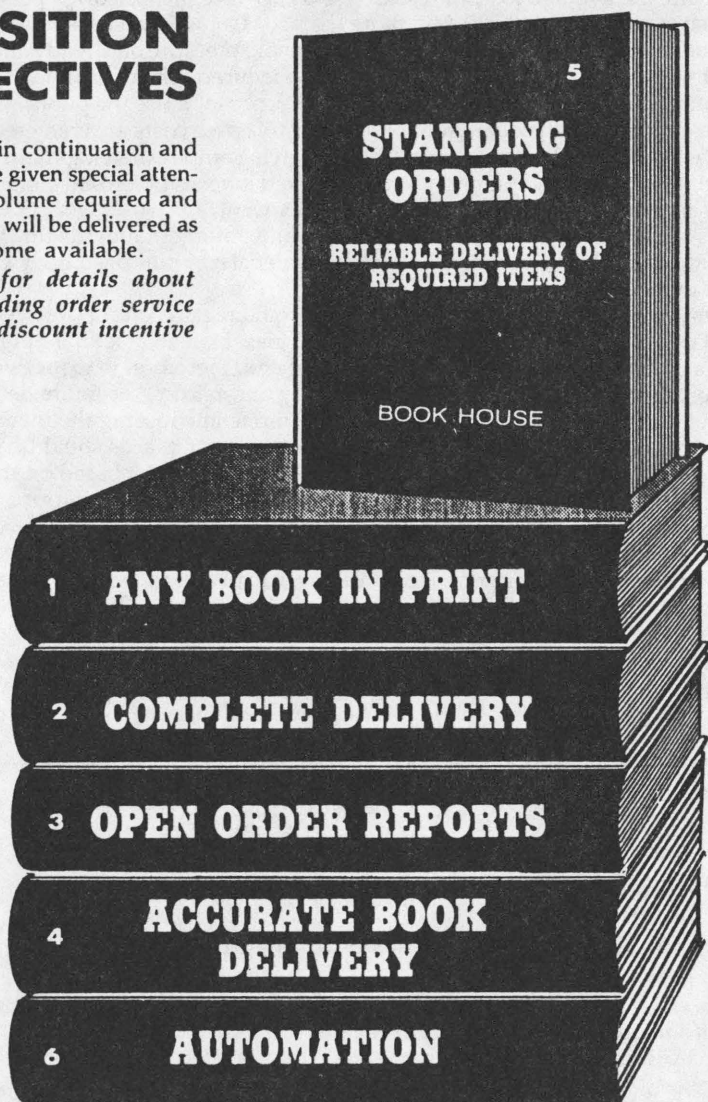
The new scholarly communication system would provide many benefits to colleges and universities, including substantial economic advantages:

- The amount of money spent by colleges and universities for subscriptions to publications

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would be substantially reduced and the savings used for the new system. In just 10 years, the average costs of research journals have increased 160 per cent, and it is likely that trend will continue. And more than 5,000 new journals, some in new fields, began publication in 1988 alone—creating even more pressure on already ailing library budgets.

- The need for more library space would be reduced. The escalation in size and number of journals creates a constant need for more space to house the publications and their readers. In 1989, each square foot of new library space costs an average of \$95.43.
- The hours spent processing journals, shelving, and reshelving them could be much better spent on developing more sophisticated indexes of journal contents and on helping users find and select the information they want.

As a bonus, the system would establish and enforce standards for the formats used for storing data, thus assuring scholars that material computerized now will be easily retrievable in the future.

Most important, however, universities would regain control over decisions made about the largest item in their budgets: faculty salaries. Instead of letting publishers and an inner circle of referees decide who gets published and, therefore, who receives tenure and merit raises, universities could insure the quality and fairness of the review of research in all fields. Universities would have a prescribed role in choosing the members of review and management boards. The reviewers chosen by such boards could be very different from the people now used by journals if the selections were not based on the buddy system or "old boy" connections. The system thus could provide better information for universities to make informed personnel judgments.

If universities, foundations, libraries, and scholarly organizations act now to form this new communication system, it could soon be in place to serve the needs of researchers and scholars far into the 21st century.

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by Sandra D. Hoffman

# “The most important part of your automation investment isn't a machine.” “It's an attitude.”

Many people think a computer system is the hardware they can see and touch. The metal boxes and wires and blinking lights.

Actually, it's much more. Consider, for example, that your real investment is your data base and application software. Without these, that hardware is nothing.

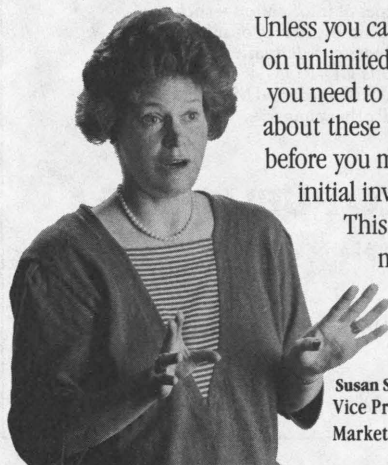
And what happens in three to four years when you outgrow all that expensive hardware? This may seem unlikely now, but it's precisely what you should be planning for. Future user demand and file sizes are hard to predict, but *will* undoubtedly grow with time. To say nothing of the continuing advances in software offerings. Of course you want a system that can grow with you and take advantage of all the useful new functions that come along.

## Think about the future *now*.

Unless you can count on unlimited funds, you need to think about these things before you make your initial investment.

This doesn't mean you should overbuy; it only

Susan Stearns  
Vice President  
Marketing



means you should invest your money on a system that is *flexible*. Because it pays to choose a supplier who can address your present needs *and* adapt when those needs change.

## A flexible system.

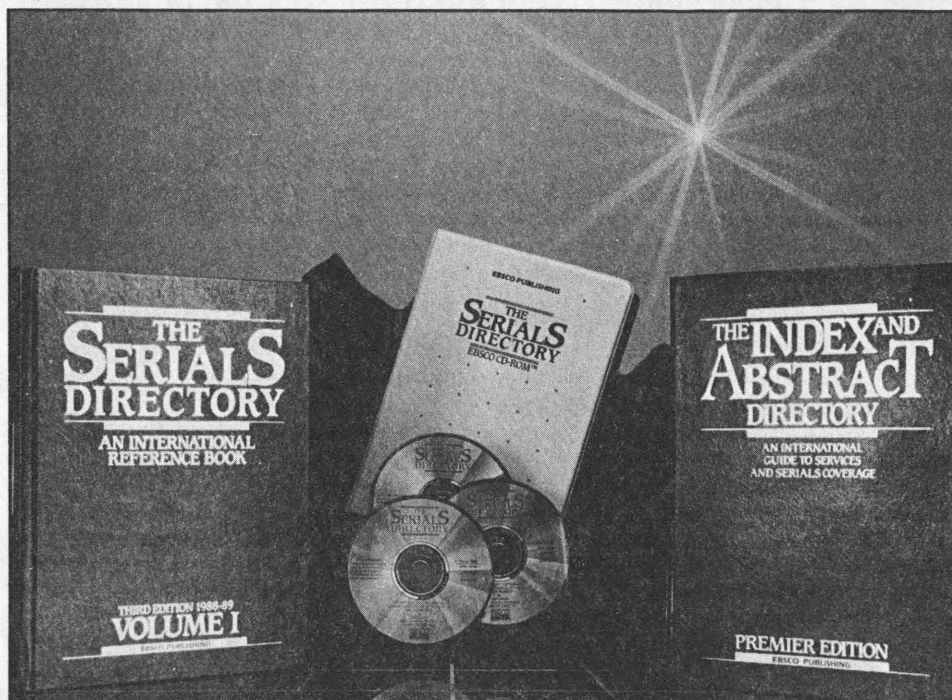
Be sure your automation company shows flexibility in software *and* hardware. It should offer an “open systems” architecture. This will let you start off within your budget, then extend services incrementally over time. So you won't have to scrap one system and replace it later with something totally different and much more costly, requiring you to go back again for major funding.

Ideally, you'll choose a system and a company that can adapt to your changing needs. Because a company whose attitude is geared toward flexibility is geared toward success. Yours.

Obviously, we can't cover everything you need to know here. But we can send you an informative question-and-answer book on this important subject. Please write CLSI, Inc., 320 Nevada Street, Newtonville, MA 02160, or call us at 1-800-365-0085.

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