

The Coalition for Networked Information's Acquisition-on-Demand Model: An Exploration and Critique

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Introduction

Scholarly communication is being revolutionized by widespread access to international, noncommercial computer networks, such as BITNET and Internet. I will call these interconnected networks, along with their commercial counterparts, the "Net." The Net has become an essential communication tool for librarians, scholars, and researchers. Net users read personal and computer conference e-mail on a daily basis, and they utilize the Net's file transfer capabilities to exchange longer documents. An alternative publication system for formal communications is also emerging, as a growing number of electronic journals, magazines, and newsletters become available on the Net.

Recognizing these changes, the Coalition for Networked Information has sketched a new model for scholarly publication, which envisions electronic article files being stored on Net computers and being available upon demand.

I will make the simplifying assumption that article files will continue to be distributed as part of "network-based electronic journals." Most network-based e-journals are published by individual scholars or small groups of scholars, who devote considerable energy to producing their publications. It would be theoretically possible to construct a monolithic, universal article archive. This appears to be both unlikely and undesirable in this decade. It also would be possible to create multiple discipline-specific article archives. This may occur for selected disciplines (especially scientific disciplines) and, if adequate funding can be secured to ensure high-quality publication support services and concerns about intellectual freedom can be addressed, it may be very beneficial. However, the most probable scenario for the 1990s is that the majority of article files available on the network will be part of e-journals, which will be produced by a diversity of publishers.

The acquisition-on-demand model raises many questions about how such an electronic service would function in detail. This paper will identify a number of possible dimensions of the model and provide some personal reactions to this expanded view of the model. It will focus on serials that are primarily published in electronic form on networks (these journals also may be published in microfiche, floppy disk, or another format for distribution to non-network users).

Key Dimensions of the Model

The seemingly simple concept of placing article files on a file server offers many different service possibilities. This section will very briefly identify ten key dimensions of the acquisition-on-demand model. Although the discussion is usually phrased in hypothetical terms, the reader should understand that network-based e-journal publishing is mature enough that space constraints prevent the author from describing every example of every aspect of these dimensions.¹

Type of Information

Currently, most e-journals are distributed as ASCII text files, a distribution strategy that does not permit as high a level of information representation as print does. What is needed is a ubiquitous, easy-to-use, low-cost, standard-based information representation scheme that will allow documents to be encoded so that color, foreign characters, illustrations,

tables, scientific notation, and other types of information found in conventional print serials can be stored, transmitted, displayed, and printed. This representation scheme also should tag the document's structural elements and describe its layout. We have some tools at our disposal now (e.g., SGML and PostScript), but their complexity, cost, and lack of integration discourage network-based e-serial publishers from using them.

Once this is done, we will have replicated the journal of today; however, the network-based e-journals of the future may transcend print limitations. It is likely that tomorrow's journals will contain executable programs, data sets, interactive computer models, and multimedia information. In the long term, they may become complex, highly-structured virtual reality information environments.

Information Scope

We expect that "scholarly articles" will have certain characteristics that have evolved in the print medium. In the Net, we are already seeing experimentation with publication of ideas and brief articles in what has been called "electronic skywriting" by Stevan Harnad, co-editor of the peer-reviewed electronic discussion journal *PSYCOLOQUY*.² This permits rapid dissemination of new information and collaborative development. In the future, we will see articles with extensive associated background information (e.g., raw and analyzed data sets) as well as contextual information linkage provided by wide-area hypermedia servers.

Quality Filtering

In today's journal, articles are usually either solely evaluated by editorial staff or peer reviewed. Articles are edited for accuracy, grammar, and style. The economics of print mandate pre-publication quality filtering.

Both of these strategies are commonly employed in the Net environment; however, another strategy is suggested by computer conferences-distribution of all received articles that are within the scope of the journal. Articles might be edited or unedited. As the CNI model suggests, the publisher might provide the user with additional evaluative information, such as user ratings of articles, usage data, and citation data. This evaluative information also could be used to weed information on the Net; however, this raises a number of issues about the adequacy of such methods. It is unclear whether scholars would view such an unbridled electronic publication effort as a welcome influx of previously unavailable information or as a deluge of low-quality junk.

Information Fixity

Articles in print journals are published and permanently archived without change. Reader reactions are expressed in letters to the editor or in future articles. In the Net environment, reader comments, some of which could be substantial size, could be directly appended to or linked to the article, and authors could be allowed to revise or retract articles. Computer conferences could be used as a dynamic adjunct to journals, permitting immediate reader feedback on articles.

Information Structure and Packaging

Readers are accustomed to print journals having certain structural cues, like numbered pages, and packaging strategies, like multiple-article, enumerated issues. E-journal editors may choose to mimic print conventions, supplement these conventions with new ones (like numbered paragraphs), or ignore them altogether.

Some journals will package entire issues as a single file, and some will store article files separately. Separate article files may be part of a larger "issue," may be an issue by themselves, or may just be a non-enumerated part of the journal as a whole.

Frequency of Publication

Many scholarly print journals are published on a regular publication cycle. Network-based electronic serials are more likely to have irregular publication patterns than print journals, especially if a single article constitutes an issue. There is no technical reason why articles cannot either be released as they are edited or held for release according to a pre-determined schedule. Editors of multiple-article-issue journals are likely to continue the practice of releasing articles as a group.

Distribution Strategy

Several methods of distributing issue or individual article files are possible. Files can automatically be sent via e-mail or file transfer to a subscriber list. They can then either be archived for retrieval by Net users or archived in a private journal storage area and distributed on request by journal staff. Another strategy is to send an e-mail announcement of file availability, and let users retrieve files of interest.

There can be one Net archive site for a journal or multiple national/regional archive sites. Individual libraries can act as local distribution agents. Redundant data storage sites will increase the probability of preservation of e-journals and help localize Net file transfer traffic; however, if information is dynamic rather than static, multiple storage sites may lead to problems in synchronizing different copies of an article, and scholars may find it difficult to determine what the proper "current" version of an article is.

Until display technologies improve and software for reading electronic information becomes more powerful, it is likely that users will prefer to download and print lengthy articles rather than read them online. Increasingly, e-journals will be reproduced on high-speed, high-quality printers at libraries, offices, and homes; however, users also will take advantage of the fact that articles will be in machine-readable form by utilizing them in conjunction with text management, word processing, and other software.

Information Pricing

Several e-journal pricing schemes may be employed in the network environment, such as: 1) traditional annual subscriptions, with file distribution and access being limited to subscribers; 2) site licenses for unlimited or "block" (i.e., a fixed number of file retrievals) access by institutional users; 3) block access charges for individual users; 4) per-use charges for all users; and 5) free access.

Pricing mechanisms could be further qualified by consideration of a variety of other factors; however, easily understood, objective cost factors (e.g., cost of a site license is related to the number of users) are far more likely to be accepted by users than fuzzy subjective factors (e.g., the "value" of an individual article). Users are likely to prefer pricing schemes that result in predictable costs that can be budgeted for on an annual basis and to resist per-article use charges, especially if these charges vary from article to article.

Intellectual Property Rights

Existing copyright transfers by authors to print journal publishers, which may or may not be accompanied by payment of page charges, may be emulated in the Net environment.

By contrast, e-journal publishers may only require that authors give them the perpetual, nonexclusive right to publish a paper, letting authors retain their copyright.

The practice of licensing electronic information, which is so prevalent in the commercial publishing sector, also may be utilized for network-based e-journals. Or, e-journal publishers may allow user ownership of information, subject to copyright restrictions.³

Type of Publisher

Under existing arrangements, network-based e-journal publishing is cheaper than print publishing, broadening the base of potential publishers. This is especially true if no fees

are charged, which reduces administrative overhead. However, if a journal is edited and/or peer-reviewed, the resources and time required for these tasks are equivalent to those needed for print publications.

There is likely to be a heterogeneous mix of electronic publishers on the Net, such as: 1) individual scholars or small groups of scholars, 2) colleges and universities (e.g., academic departments, libraries, and academic presses), 3) nonprofit professional associations, 4) commercial publishers, and 5) intermediary organizations (e.g., indexing and abstracting services).⁴

Implications of the Model Dimensions

Clearly, many possible permutations are possible with a ten-dimensional model, some of which are more probable than others. Without question, there are more dimensions than I have chosen to focus on here. As librarians, our goal should be to identify desirable futures from the many potential futures and to work toward making those outcomes a reality.

Given the serious state of crisis that our existing serials publication system is in, I will focus my brief remarks on the most difficult aspects of the model: pricing, intellectual property rights, and type of publisher. Technical and logistical aspects of the model, while interesting and important, are not as crucial to the future of e-journal publishing.

Commercial publishing as we know it is likely to continue in the foreseeable future and be extended into the Net environment. Since commercial publishers have the resources and proven ability to produce high-quality journals, this is desirable. It should be possible to make a profit from such ventures.

However, it is equally desirable to foster the development of an alternative e-journal publication system, based on the efforts of scholars, universities, and nonprofit organizations, that will provide low- or no-cost access to serials information and grant liberal intellectual property rights to authors and users. If we fail to do this, access to serials information may become more expensive and more restrictive than it is under the current print-based publication system. The development of an alternative e-journal publication structure will provide a useful counterbalance to commercial publishers, and it will help speed the evolution of network-based electronic publishing through its experimental efforts.

Conclusion

The future of the acquisition-on-demand strategy will be increasingly complex and heterogeneous as network-based e-journal publishing evolves. The diversity of the network-based e-journal marketplace will be its strength, and it will help ensure a free flow of scholarly information. The print journal is likely to remain as the primary channel of formal scholarly communication in this decade; however, network-based e-journals are likely to become an increasingly important parallel source of scholarly information.

Notes

1. For an overview of current network-based e-journal publishing activity, see the special issue on this topic of *The Public-Access Computer Systems Review* (send an e-mail message with the command "GET CONTENTS PRV2N1 F=MAIL" to the BITNET address LISTSERV@UHUPVM1 or the Internet address LISTSERV@UHUPVM1.UH.EDU). Additional perspectives on e-serials are provided by several authors: Charles W. Bailey, Jr., "Electronic (Online) Publishing in Action . . . *The Public-Access Computer Systems Review* and Other Electronic Serials," *Online* 15 (January 1991): 28-35; William Gardner, "The Electronic Archive: Scientific Publishing for the 1990s," *Psychological Science* 1 (November 1990): 333-41; Stevan Harnad, "Scholarly Skywriting and the Prepublication Continuum of Scientific Inquiry," *Psychological Science* 1 (November 1990): 342-44; Tim King, "Critical Issues for Providers of Network-Accessible Information," *EDUCOM Review* 26 (Summer 1991): 29-33; Paul Metz and Paul M. Gherman, "Serials Pricing and the Role

of the Electronic Journal," *College & Research Libraries* 52 (July 1991): 315-27; Anne B. Piternick, "Serials and the New Technology: The State of the 'Electronic Journal'," *Canadian Library Journal* 46 (April 1989): 93-97; Sharon J. Rogers and Charlene S. Hurt, "How Scholarly Communication Should Work in the 21st Century," *College & Research Libraries* 51 (January 1990): 5-8; "Task Force Report Looks at Future of Information Services," *Bulletin of the American Physical Society* 36 (April 1991): 1105-51; Jerome Yavarkovsky, "A University-Based Electronic Publishing Network," *EDUCOM Review* 25 (Fall 1990): 14-20.

2. Stevan Harnad, "Post-Gutenberg Galaxy: The Fourth Revolution in the Means of Production of Knowledge," *The Public-Access Computer Systems Review* 2, no. 1 (1991): 39-53. (Send an e-mail message with the command "GET HARNAD PRV2N1 F=MAIL" to LISTSERV@UHUPVM1 or LISTSERV@UHUPVM1.UH.EDU.)

3. For further discussion of intellectual property rights issues, see: Ann Okerson, "With Feathers: Effects of Copyright and Ownership on Scholarly Publishing," *College & Research Libraries* 52 (September 1991): 425-38.

4. Ann Okerson, "The Electronic Journal: What, Whence, and When?" *The Public-Access Computer Systems Review* 2, no. 1 (1991): 11-18. (Send an e-mail message with the command "GET OKERSON PRV2N1 F=MAIL" to LISTSERV@UHUPVM1 or LISTSERV@UHUPVM1.UH.EDU.)

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