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Online Journals: Disciplinary Designs for Electronic Scholarship

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1.0 Introduction

The decade of the 80's has witnessed the advent of a revolution in scholarly communication. The explosive growth of wide-area academic computer networking using BITNET/EARN, Internet, and an extensive array of regional networks has brought us beyond the point of asking whether the networks will be used for scholarly communication. The important questions now center around how computer-mediated scholarly communication will take place. Increasingly, speculation has focused upon the ability of electronic media to replace paper as the primary delivery medium for scholarly journals.

A prima facie case for the desirability of online or electronic scholarly journals seems already to exist. Advocates have based their cases on the advantages of computer networking and electronic media over print publication, such as the speed of dissemination, the relatively low costs of production and dissemination, and the ability to make more scholarship available than before [1]. Noting that publishers receive the economic benefits of research produced at public expense, Okerson has suggested that an electronic publishing component within the National Research and Education Network would enable scholarship to remain financially accessible to the public [2].

Other arguments have been based upon the ways that electronic publication might improve the practice of scholarship within academic disciplines. For example, advocates have described the superior possibilities for information retrieval that may be achieved when scholarly articles are interconnected in flexible databases [3, 4]. Yavarkovsky [5] and Lyman [6] have suggested that electronic publication can facilitate certain types of scholarship that generate products better represented in graphics, or in three-dimensional, animated, or moving visual representations. Other researchers have argued that electronic journals might be aimed at facilitating informal communication processes through which original ideas are generated and refined and preliminary information about research is disseminated [7, 8, 9].

Although the future of electronic journals seems promising, their adoption by scholars will not be determined solely by the number of technical innovations or by the medium's ability to tip the scales in a comparison of costs and benefits with print media.

The decade of the 90's will no doubt witness many attempts to introduce models for electronic academic journals. Whether these journals succeed or fail will depend on the extent to which a particular journal's design is consistent with the social practices of the discipline it serves and the extent to which it reflects the discipline's needs for information and communication.

If this is true, it follows that no single journal model will serve as a prototype for all disciplines. Instead, designers of electronic journals would do well to understand how their particular disciplines' social practices may block or delay the acceptance of an electronic journal. The journal must be designed and introduced in a way that overcomes these hurdles, while offering an approach to "publication" that improves the discipline's ability to satisfy information and communication needs.

In this article, we describe the approach we have taken in the design of the Electronic Journal of Communication/La Revue Electronique de Communication (EJC/REC, ISSN 1183-5656). We begin by noting differences between disciplines that argue for a variety of approaches in electronic journals. Then, we focus on the considerations that were most important to us in planning the development of EJC/REC, and we describe how we have attempted to address them. Our strategy has centered upon the idea of introducing EJC/REC within the context of an electronic service known as Comserve--a broader disciplinary project whose aim is to promote the use of electronic media in communication scholarship. Finally, we call attention to challenges that designers of electronic journals will face in attempting to institutionalize the medium within the academy.

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2.0 Disciplinary Differences in the Design of Online Journals

Electronic media makes feasible a dazzling array of innovations with the potential to transform the nature of scholarly communication. Developers are eager to incorporate these features into the design of electronic journals. However, these innovations will not be equally attractive in all disciplines. Although journals in the sciences, humanities, and the social sciences appear to be fairly similar, there are systematic differences in the kind of information they include and the way that information is presented [10]. These variations in journal design and presentation reflect more fundamental distinctions across the disciplines in journal publication processes, the way that journals are used, and the types of contributions journal articles represent. Those planning to develop electronic journals must be sensitive to these differences.

2.1 Electronic Archives

Some of the most radically innovative proposals for online publications have focused on the improvements in information retrieval that can be obtained when journals and their contents are interconnected in archival databases. Designers of these "electronic archives" (the category "journal" no longer seems apt) plan to incorporate certain characteristics of traditional journals such as editorial boards and peer review, but use technology to transcend the limitations of print. Their aim is to create information retrieval features that enable users to access a single article as well as a body of literature that is relevant to it, to place comments and rebuttals to specific articles within the archive, and to generate instructions that will identify additions to the system that are of interest to particular users [11, 12, 13].

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One would expect such a model to be attractive in the natural and applied sciences where scholars often pursue particular questions systematically within established theoretical programs. Research such as this, occurring in fields like medicine, engineering, physics, and biology, is often supported by large grants or contracts. In such contexts, new knowledge accumulates rapidly and supersedes existing knowledge; scholarly credibility depends upon the ability to portray one's work as integral within this stream. However, this type of process is barely evident within most humanities and social science disciplines. Further, we question whether the economic resources devoted to disciplinary inquiry will be sufficient for the construction and use of such elaborate information retrieval capabilities.

2.2 Non-Traditional Electronic Journals

It has also been popular to suggest that, instead of replacing traditional journals, online publications might address other aspects of scholarly communication. For example, online journals might be used to disseminate brief summaries of research and information about research in progress [14], to engage in more limited exchanges of information [15], or, more ambitiously, to support and institutionalize informal scholarly communication activities that typically take place in interpersonal contexts [16]. Informal scholarly communication, which is regarded as important for generating ideas and communicating information about ongoing research, takes place at conferences, at colloquia or symposia, and through correspondence. It is typically restricted to small numbers of individuals. Electronic media would enable these activities to take place on an ongoing basis with greater levels of participation.

Some of these proposals spring from fears about whether electronic journals will command the credibility of traditional print publications. For example, Turoff and Hiltz's focus on developing electronic alternatives to traditional journals was motivated by their discovery that scholars were reluctant to

place their work in the Electronic Information Exchange System (EIES)-maintained journal [17]. They surmised that this reluctance was due to perceptions that articles in this journal would have a smaller chance of being cited by others.

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In the natural and applied sciences, where informal communication is the scholar's primary means of keeping up to date on research advances, computer-mediated information exchanges may be valued, though it is not clear if electronic journals that carry out such functions will ever command the same prestige as traditional publications. Peer review and broader network access to these journals would surely help to overcome some of their limitations.

However, what is true of one discipline may not be true of others. In many humanities and social science disciplines, informal communication may play a greater role in generating ideas than disseminating information about research in progress, and journal article publication is itself viewed as a less important contribution to knowledge than publication of a book [18]. In such disciplines, electronic journals may never achieve the credibility of print. Indeed, Katzen's suggestion that scholarly communication functions are likely to be split between electronic and print media seems to proceed from the assumption that humanities scholars will find it very hard to break their allegiance to print [19]. Electronic journals are viewed as impermanent, less satisfying to read, and it is feared their contents will change as the journals are disseminated. Therefore, these journals may be suitable for reflecting what is transient in scholarship; what is permanent and authoritative should be preserved in print.

We do not doubt that electronic media will stimulate the development of new forms of scholarly discourse; however, we were reluctant to introduce both a new genre and a new medium of journal publication. Historically, the journal article evolved as a genre of scholarly discourse from the first published scientific communication, which consisted of letters sent to the editor of the Philosophical Transactions of the Royal Society of London [20]. In the same way, we expect that new genres of electronic scholarly discourse across the disciplines will evolve after the medium in which they appear has acquired the imprimatur of scholarly legitimacy.

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3.0 The Design and Introduction of EJC/REC

One might expect that those who study human communication would be the first to embrace the advantages of new communication technologies. However, while there are many communication scholars who are interested in communication technologies, there are many others who have little experience in computing and who are just as likely as other scholars to question the viability of

new publication systems. Any new serial is going to face issues of permanence (will it still exist in three years?), accessibility (will it get into the hands of other scholars?), and credibility (will articles be peer reviewed and cited by others?). It was apparent that the new medium would make it more difficult to provide the usual assurances. Further, we recognized that the medium posed challenges not experienced in print publication that would have to be overcome. Thus, before any of the advantages of online journals could be realized, we believed that it was necessary to overcome the obstacles presented by the medium.

3.1 Comserve: An Electronic Publisher

One of the first decisions made was to offer EJC/REC under the auspices of Comserve. Comserve is an electronic information and discussion resource that, since 1986, has used national and global computer networks to provide disciplinary services to communication scholars and students. Individuals interact with Comserve using accounts on local mainframe computers that are linked to BITNET, Internet, or any network connected to them. Comserve functions as a software robot with its own network address, watching for and taking action on commands that users send to it.

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Comserve's primary purpose is to promote the use of electronic networking and computer-mediated communication in the service of communication scholarship. Available 24 hours a day, seven days a week, at no charge to users, Comserve offers four basic types of resources:

- (1) An interactive "white pages"--an electronic directory of names, electronic mail addresses, and research interests of individuals in the discipline.
- (2) Electronic indexes to disciplinary journals that can be searched for bibliographic citations.
- (3) A database of over 1,000 files containing research, teaching, and other professionally useful information.
- (4) A suite of 20 online conferences addressing research, teaching, and professional topics in communication studies.

By associating the publication of EJC/REC with Comserve we hoped to dispel some of the inevitable doubts about the permanence of the journal. When the first issue of EJC/REC was published, Comserve was entering its fifth year of operation, making it one of the oldest disciplinary services on the networks. Comserve

had received financial support from several of the discipline's professional organizations as well as from many individual departments of communication throughout North America, thus indicating that it had achieved some measure of recognition and visibility within the discipline.

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Furthermore, by associating EJC/REC with Comserve, we hoped to provide some assurances about EJC/REC's accessibility. Users have generally found it easy to learn how to access Comserve's resources, as indicated by the speed of diffusion among students and faculty. Over 20,000 individuals from nearly every major academic institution in the United States, Canada, and Mexico (as well as in 35 other countries) have sent over 250,000 commands to Comserve. Approximately 4,500 individuals maintain subscriptions to one or more of Comserve's electronic conferences.

In the same way that many scholarly associations act as publishers of their own disciplinary journals, Comserve acts as an electronic "publisher" for EJC/REC. As an electronic disciplinary forum, Comserve offers an array of incentives for faculty and students in communication studies to learn how to use computer-mediated communication for scholarly discourse. The services described above fall within the realm of informal scholarly communication. EJC/REC, a mechanism for formal scholarly communication, complements these efforts to institutionalize the use of electronic communication within the field. Together, Comserve and EJC/REC are helping to create an electronic community of scholars. Within such a community, we believed that an electronic journal has a significant chance to develop disciplinary stature.

3.2 EJC/REC: Form and Content

In its first year of publication, EJC/REC has delivered two issues and is in the process of producing its third. Technically, subscriptions are managed automatically through a special electronic conference devoted to the journal that is managed by Comserve. Interested individuals may subscribe to the journal by sending the following command on the first line in the body of an electronic mail message to COMSERVE@RPIECS (BITNET) or COMSERVE@VM.ECS.RPI.EDU (Internet):

```
SUBSCRIBE EJCREC First_Name Last_Name
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(Example: SUBSCRIBE EJCREC Mary Smith)
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The journal's 320 subscribers automatically receive the journal's table of contents, abstracts for each article in the issue, and the names of files containing each article in the issue. Files are named by author and volume/issue number. Those interested

may then request files containing desired articles by sending the appropriate command to Comserve (at either of the addresses noted above). For example:

SEND MCKEOWN V1N190

refers to an article by Bruce McKeown of Westmont College entitled "Q Methodology, Communication, and the Behavioral Text," appearing in volume 1, number 1 of EJC/REC in 1990. Articles appearing in back issues will continue to be available through Comserve and may be requested at any time. All articles are in ASCII format.

With respect to editorial policies, EJC/REC seeks to be broadly representative of the field of communication studies and invites submissions related to the study of communication theory, research, practice, and policy. Manuscripts reporting original research, methodologies relevant to the study of human communication, critical syntheses of research, and theoretical and philosophical perspectives on communication are encouraged. Manuscripts are reviewed by relevant individuals within a thirty-member editorial board consisting of scholars representing diverse interests in the field from Europe, Canada, and the United States.

To establish a credible publication history, attract readership, and encourage submissions, we have devoted initial issues of EJC/REC, edited by scholars with established reputations, to special topics within the communication field. Thus, the first issue addressed the topic of "Q Methodology and Communication: Theory and Applications" and was edited by Irvin Goldman of the University of Windsor and Steven Brown of Kent State University. Goldman and Brown, acknowledged heirs to the scholarly legacy of psychologist and communication theorist William Stephenson, who invented Q methodology, identified noted scholars in the area, invited contributions to the issue, and supervised the reviewing process.

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Since EJC/REC originates in Canada, there have been efforts to create a journal that is bilingual in certain aspects of its presentation and in some of its focuses. Editorial duties are distributed between James Winter of the University of Windsor (English-speaking editor) and Claude Martin of the University of Montreal (French-speaking editor). Articles may appear in English or French. Although articles will not always be translated into both languages, messages from special issue editors, article titles, and article abstracts are presented in French as well as in English.

4.0 EJC/REC: In the Future

We recognize that we have not resolved all doubts about the

permanence, accessibility, and credibility of EJC/REC. Ultimately, these doubts can only be resolved, and the journal's future assured, when EJC/REC is incorporated within the recognized body of scholarly knowledge. This means ensuring that the journal is readily available through university and college libraries. Although libraries may currently subscribe to issues of EJC/REC distributed through the network, we plan to improve availability by distributing the journal to libraries on diskettes (at well below current costs for print journals) as soon as a full volume becomes available. We are also exploring possibilities for including the journal in standard citation services and other secondary bibliographic resources in the humanities and social sciences.

Finally, one important hurdle we, and other designers of electronic journals, must attempt to address is the onerous experience of reading an online journal. It is necessary to display the contents of online or electronic journals in ASCII format because there are few word processing systems compatible with the many different kinds of computing equipment that can be used to display text. As most already know, reading large quantities of text on video display terminals is not a comfortable way of consuming scholarship. Many editors of online journals are resigned to the fact that their readers will download articles of interest and print them in order to read them. Thus, the electronic medium is viewed as suitable for delivering, but not for experiencing, text.

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We are impressed by the results of an experiment conducted by Standera that assessed reader responses to a journal appearing in five different formats, including an electronic version read on a video display terminal [21]. He concluded that before readers will be willing to change their preferences for print: "Designers (of electronic publishing systems) must provide improved legibility, easy browsing, more friendly procedures, ready availability of indexes, portability, and less fatigue" [22].

Some improvements in legibility will occur with advances in video display technology. But needed now, or in the very near future, are more fundamental improvements in the reader's ability to "handle" or manipulate text. The allegiance to print is in great measure an unwillingness to give up advantages conferred by the materiality of paper. Until they can do with electronic text what they currently do with text on paper, scholars will retain their devotion to print and resist converting to electronic media.

Notes

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15. Turoff and Hiltz, "The Electronic Journal: A Progress Report," 195-202.

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18. Blaise Cronin, "Invisible Colleges and Information Transfer: A Review and Commentary with Particular Reference to the Social Sciences," Journal of Documentation 38 (September 1982): 212-236.

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22. Ibid., 299.

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