Workshop on
Multimedia and Internet Technologies
26th-28th February, 2001
DRTC, Bangalore

Paper: AH

Electronic Journal: A new way to get Information

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Abstract

Today information available is communicated by various means. While publication is a public announcement, which helps to communicate and transmit information, with evolution of new technology, the way of publishing has also changed. Data centers have changed their role and now act more as hubs for distributed specialized repositories of different types of data and material rather than, as in past, holding as much as possible themselves and carrying out the integration work a their own locations. This is due the fact that evolution of information technology has brought major modifications to hardware and connectivity as well as new tools for e.g. client/server, WWW browser, etc. and concepts like hypertext/hypermedia concepts, virtual libraries, etc. With the emergence of new technology, one way to communicate scholarly information is 'Electronic Journals'.

1 Introduction

Most students and academic staff gain access to only a few scholarly journals through their academic or institutional library, since a private individual can afford to buy at best only a handful of journals. Access to journals in academic libraries is difficult because:

- Even well endowed university libraries cannot afford to purchase all the journals that the members conceivably might need access to.
- Even if the library does subscribe to the journal the user wants, it has only one copy and the user must go to the library to look at it.
- Most library catalogue systems list only the title of the journal itself, not the titles of individual articles within it. The user has to use abstracting and indexing services to identify individual articles of interest.

In contrast to these traditional journals, electronic journals have the potential to revolutionize access. Given an appropriate infrastructure, journals articles can be delivered direct to a screen on every scholar's desk when required, with little delay.

2 E-Journal

The concept of an electronic publication to replace or supplement the traditional scholarly journal has existed for twenty years, and serious research about electronic journals has been in progress for past fifteen years. Only in the last five years, however, the infrastructure has been in the developed world for the electronic journal to become a practical proposition: the Internet, software such as gopher and World Wide Web (WWW), inexpensive large-capacity hard disks, and the widespread availability of microcomputers, linked to the Internet, on the desks of individual scholars.

The perceived advantages of the electronic journal over the equivalent printed journal are several. Publication is quicker without the delays inherent in printing and postal delivery. Costs are lower; the price of paper, for example, has been

rising faster than general inflation for many years. Today modern user-friendly software enables academic editors and referees to undertake themselves tasks that used to require skilled craftspeople such as compositors. And above all, new facilities can be incorporated into journals, such as hypertext links both within and between papers, interactivity between paper and reader, and the inclusion of multimedia features such as animation, video clips and sound into papers.

Two main types of scholarly electronic journal have emerged. One is newly founded, published by its academic editor, and issued free of charge over the Internet, and uses software such as electronic mail, telnet, ftp, gopher and/or WWW to distribute papers to users with varying degrees of technological sophistication. The other is typically the electronic equivalent of an established printed journal, is published by a commercial publisher (for-profit or not-for-profit), and requires a subscription that is often as high as or higher than that of the printed version. In order to preserve the appearance of the printed page in the electronic form ("page integrity"), publishers frequently use commercial software such as Adobe Acrobat, which requires users to maintain a viewer program on their own machine. Such software provides for proper reproduction of tables, mathematics and extended character sets, which may be difficult to achieve with the public-domain software.

The number of electronic journals is increasing rapidly and is therefore difficult to estimate. About 2,000 electronic periodicals available free of charge over the Internet currently exist (August 1996). Most of these are newsletters or "zines" rather than refereed journals, but probably 10% or more of the total are scholarly ones. During 1995 - 1997, however, many of the substantial commercial publishers of scholarly journals, especially those in the scientific, technical and medical fields, have announced plans to make their existing titles available in electronic form for a fee, and a number of these services are now running on a routine basis.

But there is an understanding problem between authors and publishers over electronic publishing. Authors concentrate on electronic manuscript preparation and submission. Readers focus on retrieving information from the Internet. Librarians focus on the delivery of information to users, but they often overlook electronic archiving. Publishers concern themselves with the handling of electronic manuscripts, copyediting, formatting, typography and the production of versions suitable for delivery to the end users. They also worry about collecting the revenues needed to keep their operation financially viable. Electronic publishing of scientific journals embodies all of these aspects. In the end it creates new capabilities that extend far beyond what the paper journals can provide. It is precisely these new capabilities that will make electronic publishing such a powerful tool for scientists. Electronic tools provide search and retrieval abilities beyond anything that can be done with paper, but only if the system is setup to take advantage of the interlinked access capabilities of the Internet. Many different kinds of information can be effectively distributed electronically.

The central feature of any electronic information-distribution system is the database of information, coded and organized in such a way that the desired information can be retrieved in a useful form, because readers want papers and other data in various forms: Output to a screen is important for browsing and searching but is not well adapted for extensive reading; paper copies of selected information will definitely be required. Therefore the article has to be transmitted electronically to the reader's local printer. Tabular material will be needed in formats suitable both for reading and for manipulation by the reader's computer. For the most part, publishers will have to ensure that they can produce the familiar, printed volumes from the central database and that all versions are identical.

The tools available for self-publishing on the World Wide Web are powerful. It is now possible for an individual author to add codes to a manuscript, convert equations and special characters into graphic images and display a readable copy of the paper on the Web. The principal tool that makes this possible is the Hypertext Markup Language. But it is important to understand why individual,

hand-coded papers will not serve the needs of the scientific community as an effective publishing mechanism. Readers must be able to search for information and then have it available as part of a structured, searchable database. Reader's want the electronic manuscripts to be available in multiple forms and not just displayed on the screen. They also need paper copies printed locally, some stand-alone form such as CD-ROMs and the traditional typeset journal issues on the shelf.

All of this requires a significant amount of logical markup coding to identify various pieces of the manuscript. Hypertext Markup Coding, including the new version currently under development, is not sufficiently structured or versatile. To be effective, the markup has to conform strictly to a uniform set of standards; most authors are not willing to take the necessary trouble.

Even the best papers are of no use if they cannot be found when you need them. The research literature is of most value when you can search and recover articles of interest from a large collection. Strict adherence to markup standards is absolutely necessary if such searches are to work. Precision and attention to details are extremely important. One cannot effectively search among single papers stored in hundreds of locations across the whole net. Being able to put their papers on the network may gratify authors. But the intended users of the information must first locate and retrieve a paper and, second, be assured of its quality and stability. A database maintained by authors give no assurance that the version of a paper you see today is the same as the one you were reading last month. It will take good planning to create an electronic publishing system that will really serve the research community's needs.

3 Difference between print and electronic journal

3.1 The characteristics of the print journal

A related classification of function can be got by identifying the nature of the text or information published: from the novel, through the data compilation, to the

encyclopedic reference book, to collections of cartoons or cookery recipes, to the full-scale encyclopedia and works of non-fiction in general.

The book or journal is portable, it has random access to its contents, especially if the book has an index; the book can also be a multimedia object, in that it may contain not only text, but also graphics, drawings and photo-reproductions; it is also conveniently accessible in that once you have the book, you need no other artifact in order to read it, and its energy demands are minimal.

3.2 The characteristics of electronic publishing

Electronic publishing has very specific characteristics that distinguishes it from print publication:

- electronic publications can be produced and disseminated very rapidly - once a page of text has been coded with HTML tags it can be published immediately - the book takes much longer to produce and distribute;
- if correction is necessary, an electronic text can be updated or corrected (by another not end-user) with the same immediacy, whereas a book must either go through a second edition, or, if the error is caught in time, have an erratum slip inserted;
- electronic publication can be made collaborative and interactive, involving either several "authors" or authors and readers;
- electronic publications can be disseminated world-wide without the need for separate rights negotiations for different countries and without the costs of distribution or reprinting; where an electronic publication is charged for, the producer does not incur the costs associated with retail book selling, that is, there are no "middleman" costs;
- through effective, electronic interaction with the buyer or user of an electronic publication, the producer can collect valuable market-research data very cheaply.

3.3 The salient features of electronic publications are:

- they can be delivered to the desktop
- they can be read by more than one person at a time.
- the text can be searched.
- if they are on the WWW, they can take advantage of the ability to make hot links, both internally and to other publications.
- they can include multimedia and graphics, in color, at marginal cost.
- they can be published more quickly than paper publications.
- they can be interactive; that is, they can foster an online exchange of ideas by e-mail.
- the content can be reproduced, forwarded, modified, leading to possible problems with copyright protection and preserving authenticity.

4 Need for e-journal

Scholarly communication is in the early stages of a fascinating and far-reaching transformation made possible by the computing and communications revolution. The evolution of scholarly communication towards an electronic format is driven by two main factors: (i) potential cost savings, and (ii) attractive new features. This evolution is also inhibited by the huge inertia of the academic system.

1. Traditional journals have limited space and capacity. Authors want more of their work published. E-material is easily spread through user-friendly e-mail and the Web, especially with its search engines of recent times.

2. Print Journals now cost so much that libraries can hardly subscribe to all those needed by their users. There is fast growth in new electronic-only journals, published by scholars themselves, without involvement of traditional publishers. Many of these journals are operated with no fees at all, or else with submission fees paid by authors, and thus freely accessible.

3. The "journal crisis" refers to the inability of libraries to keep acquiring all the journals they have been getting, and not being able to afford to subscribe to new ones. It is thus an economic issue, and the most promising way to solve it is by lowering costs of scholarly publishing. Electronic publishing offers an opportunity to save at least 90% of the costs of the current system. Publishers are not willing to admit this yet, but there is plentiful evidence that such savings are feasible, provided one is willing to rethink the entire process and give up some non-essential features. However, in the short run, what is more likely to happen is that electronic publishing will enable publishers to preserve their revenues, profits, and inefficient production methods, and that savings will come on the library side. The reason is that the "journal crisis" is really a library cost crisis. For every rupee that libraries spend on journals, they spend at least two on internal costs, most of which are associated with handling of physical copies. By eliminating print editions, and digitizing back issues (a process that is surprisingly inexpensive), publishers can greatly reduce the costs of the entire system without reducing their revenues.

4. The speed with which traditional articles appear it's so slow, in fact, at times that when one piece is written in one year, it is published in next year. Many articles are outdated by the time they appear in the print medium.

5. Paper subscriptions have become so costly that they are beyond the means of most, including libraries, to purchase them. Cancellations abound; new subscriptions are not made. There are many features also which make e-journals extremely attractive compared to their print counterparts. "Subscribers can receive automatic notification via e-mail or fax of newly published information in their field. After retrieving an article online, subscribers are advised if there are related letters, rebuttals, and retractions. Other features include online journal-specific news, an extensive help system, toll-free telephone support, and comprehensive user documentation."

6. The nature particularly of scholarly publishing has always been to share work and never has it been to sell work. The idea is to reach one's peers and colleagues. Much of this has always had a small audience. Now, just about any scholar on any esoteric topic can share their work around the world with FTP or http archives. The net allows the unimpeded "flow of esoteric knowledge to all: in advance."

7. In old days to ask or discuss any part about the article one has to write to the author and wait for the reply. But now electronic journals provide links to discussion lists, where you can ask immediately and get the feed. Many of readers now can tap expertise available 'worldwide' to discuss common interests, to learn from one another, to share expertise and pool their experiences towards solution of common problems. And it can be carried out by a few for the many quite cheaply.

8. Many, or most, academic e-journals are tied in some way to listservs, as mentioned earlier. This ties them to the old version of 'journalizing' thoughts before they become formal papers. Feedback is instant, thoughts can be 'wild' and yet, there are no particular academic consequences to this form of pre-publication 'thinking out loud', and just feedback from around the world that only helps and contributes to growth.

9. Print journals just presents as it is. The way it has been print, the reader can only overlook it. But e-journals can be a reflection of the authors' paper counterparts, as many are, or they can be quite different since one is not dealing with print. Therefore, limitations of the print product do not apply. Authors can make interesting links between different items, either print, graph, picture, video or audio. Formats can become quite unique. For example, one can go through a text and present it as a whole while allowing readers to pick up graphs immediately, all at once or not at all. The reader, thus, has some choices as to how they want or prefer to go through an article.

5 Steps and issues in electronic publishing

1. **Preparing and submitting manuscripts:** After writing papers, authors are generally impatient to distribute their results, especially to colleagues. The wait for refereeing and copyediting can seem interminable.

2. **Peer review serves to ensure scientific quality:** While some would argue this point, there is a clear difference between unrefereed conference proceedings and the peer-reviewed journals.

3. **Copyediting, typesetting, page makeup:** Many authors do not adequately appreciate the importance of these steps in improving the accuracy and usefulness of the information transfer. Clarity of writing and readability of pages are important characteristics of a good journal.

4. **Database preparation:** The database is a crucial element of the electronic information dissemination system. Preparation includes the maintenance of effective search and retrieval tools.

5. **Production and dissemination in multiple formats:** The final step in the delivery system is the provision of the information in a format suitable to the delivery medium and the user's needs.

6. **Archiving:** Permanent storage of published papers for future use is a continuing task. The evolution of storage technology and the eventual transfer of archived materials to new generations of storage media will become a growing task for publishers and librarians.

6 Advantages of electronic journal

Online publication without any print component was considered a key feature of the electronic journal for at least four reasons:

- ***Navigation*:** Navigation and search are two of the most attractive features that an online publication currently has to offer. For now, though, both

features remain fairly primitive in most settings and are of limited value until the volume of publications grows significantly. Relatively few research journals are truly online in the sense of providing all of their material online rather than just abstracts and correspondence; those that have been online only for a short period. As a result, the amount of material published online to date is modest; search mechanisms are not particularly useful as yet, and navigation is confined to what is online. Indeed, most online journals to date have only primitive search mechanisms, if any at all.

- ***Interactivity and related issues*:** One exciting promise of online publication is interactivity. In a simple form, such interactivity is already present: for instance, a publication can feature Java applets that allow the reader to run customized examples. Other even simpler types of interactivity include the use of forms for querying a database (as discussed above under navigation, but put to different uses, such as making use of results discussed in an article by submitting a query to the authors' software). In future, with full multimedia publishing, those types of low-level interactivity should become far more common; it is mostly a process of educating authors and making them believe that the extra effort put into that type of interactivity is worth it. More subtle interactions will also appear. For instance, with the proliferation of online publications both browsers and servers will have to become more responsive to a particular user's needs, to the point of completely tailoring the interface so that each user actually gets a distinct, unique view of the journal she or he is browsing. Of course, such a view has to evolve, taking into account the recent history of browsing by the user and automatically prioritizing the information available.
- ***Refereeing*:** A major problem experienced by all editors is that of obtaining timely reviews: all researchers are extremely busy and so often have to be harassed to deliver a promised review. Reviewing time is a major factor in the long publication delays that plague e-journals. Usually half of the typical two years from submission to publication is spent in the refereeing process. Refereeing is no different for an online journal than for a print journal; collecting the two or three complete reports necessary to make a

decision still takes closer to a year than to a few months. Unconventional mechanisms for refereeing are made possible by the online nature of a journal. For instance, one could post submissions to an area of the server available only to a pool of associate editors and let "natural selection" take its course: if no one volunteers to handle the article, that article is rejected.

- An online journal can publish data, programs, animations, and multimedia components that no print journal can publish.
- An online journal is inexpensive: at a time when libraries everywhere have to cut their subscription lists and when some print journals can cost a thousand dollars a year, anyone starting a new journal has a duty to the academic community to make that journal permanently affordable.
- An online journal can offer features, such as online search, not available to print journals. It can also evolve quickly.
- An online journal is not tied to a printer, a format, or a distribution network; it has no page count limitation and cannot suffer from the printing backlogs that are plaguing print journals in the area. In comparison to print journals, an on-line journal should thus have a shorter turnaround time as well as more flexibility in what it can publish.

7 Conclusion

The emerging importance of the Internet does not change the role in principle but does have considerable impact on how publishers function in the future:

- Publishers need to supplement existing skills with the acquisition of new skills in developing multimedia material and facilitating interaction between scholars without detracting from the authority of the definitive publication,
- Publishers will become custodians of intellectual property rather than procedures of printed artifacts. They must add more value to the literature by exploiting different media for different purposes or user requirements,
- Publisher will have to acquire much more hands-on knowledge of, and navigation through, the laws of copyright and contract,

especially in respect of the international legal aspects of electronic publishing,

- Publishers will work more closely in partnership with universities and the research community in order to deliver electronic information effectively and easily to end-users.

But online publication gives the flexibility, ease of access, intelligent searches, portability, and ecological benefits. In near future all scientific research publications will be online with the advantage of the display quality of a good print journal, the annotation capabilities of paper and pencil, and enough memory to store all issues of several journals. In the process, however, publishers will need to rethink their approach to publication and the research community will need to reevaluate its standards for refereed publications versus instant dissemination of results.

Electronic journals still has to cope with the economy and speed, with the authority and authenticity given to the printed world. It is also subject to the vagaries of archiving and the lack of indexing.

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