E-JOURNALS FOR RESEARCH: THE USER PERSPECTIVE

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The global 'collaboratory' is becoming the academic way of life and electronic documents a vital part of it. In this more dynamic research environment, electronic journals are just one of a more integrated set of tools and there are still issues which challenge all but the most determined or most digitally literate. However, an increasing number of the academic community are enthusiastic about using or starting electronic journals, particularly where multimedia or additional data can enhance our understanding of original research or where the electronic process produces more timely debate.

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The changing research environment

Seminars and conferences still provide vital opportunities to debate new ideas and exchange experience, as is shown by the large audience for this seminar, but these are backed up by an electronic infrastructure which enables an academic to work in a less isolated and more dynamic way than previously. This concept was captured by William Wulf in his definition of the collaboratory as a

> "center without walls, in which the nation's researchers can perform their research without regard to geographical location - interacting with colleagues, accessing instrumentation, sharing data and computational resource, and accessing information in digital libraries"[1].

The collaboratory is now more truly global than national, although bandwidth is still far from adequate for communicating across the Atlantic without careful clock watching. The electronic collaboratory is also effective in the local environment even though researchers and students talk to each other frequently. One trend, that is noticeable, is that research students are tending to search the World Wide Web first, when looking for related work and looking at hard copy second. They then naturally want to store the citations they have found electronically and to share information about significant findings and ideas electronically with their colleagues. The alternative of simply referring to an article in a paper journal (which may not be easily accessible to all the interested people) then feels like a much less immediate method. Where the full text of key references is available on the Web they may then store links to the documents as sets of bookmarks. This personal digital library can then become a gateway to specialised sources for colleagues with a specific occasional need. The expert's knowledge can thus be shared more productively. Discussion may take place by e-mail or newsgroup, either across the globe or even with the next office. Papers can be sent by e-mail or ftp, or simply referred to by links to their Web site. The next step in the publication chain is to collaborate on

shared documents. Here being able to cut and paste references eases the administrative chores and hopefully increases the accuracy of citations. However, the ability to access more timely references on the Web also means that references are included to more recent preprints, conferences and other Web sites, regardless of their possible impermanence. If the completed document is then put on the Web, this gives an opportunity for electronic peer commentary or 'scholarly skywriting'[2] to take place with, as the end result, a more dynamic and fertile research environment. This should then be reflected in more useful journal articles.

The changing external environment

Although standards have simplified some processes, the academic will undoubtedly work with a multiplicity of systems and resources. These inevitably cause some uncertainty and confusion when trying to access electronic documents. Switching from a public workstation in the library to an office machine and then to a portable or a computer at home, it is not easy to be certain whether you have, for example, Acrobat, in order to read your electronic journal, or even if you have, what level you have loaded on that particular machine. With the speed at which software is upgraded, or new software developed, one also has to constantly make decisions about whether to upgrade or to re-educate oneself to use, say, Java or Windows 97 or the latest, fastest search engine. With an increase in the number of possible places to search, it may also be a challenge to remember where you found that seminal paper. Was it on the Web, in the library or in a friend's own archive? Nevertheless, electronic services have transformed our lives. We take it for granted that we can get cash when and wherever we need it, and telesales have made huge inroads into the insurance, travel and retail markets. This has inevitably raised our expectations when we are looking for information as well. 24 hour, global access becomes a requirement rather than a luxury.

Where does this lead?

We expect to be able to speed up the process of publishing our work and make it available globally to the academics who are really interested in it and who might build on it. At the same time, we are gaining a more fertile, interactive research environment which is being expanded to include more multimedia content, where this enhances our knowledge and understanding. But the 'multivalent' nature of the documents being produced means that there is an increasing need to establish an easily understood and traced publication trail or catalogue. We need to know whether we are reading a draft version, a revised version or a full multimedia version. The Electronic Publishing, report referred to later in this article, comes in different versions on the Web, and in paper form. It has a CD-ROM version as well which also contains video interviews with industry experts and samples of cutting edge work in electronic publishing. We need to be clear what we are getting and when we are paying, so that we can decide which is more appropriate at a particular time. A conference proceedings (such as Supercomputing ' 96) produced on CD-ROM enables us to take it home easily from the meeting, view animations and videos; if we have a Web browser as well, we can then follow up links to further details and related work on the Web. Facilities like these can give the edge to the electronic version whether online or not. Our expectations of journals show a parallel growth.

E-journal problems encountered in this environment

Although there is a growing tendency to look for the electronic version first, the small runs available can make the success rate quite small. It may also be difficult to be confident of the length of run likely to be available because this is currently so variable. However, both of these problems will become less significant as the runs become longer and archives become more extensive. With a variety of sources from which to access a given publisher's journals, it can be unclear when one is able to look at both the abstract and the full text. A student may be extremely worried that he/she may incur a large charge that has to be paid for personally. Sometimes sites also offer tantalising but frustrating tasters which lead you on into

wanting to read other articles. However, of more significance is the fact that passwords can be a barrier to prompt access. While it is easy to understand why passwords are a popular way of monitoring access, the current multiplicity of systems and databases mean that it is almost impossible to keep track of all the valid passwords that are needed. It is encouraging to hear Institute of Physics Publishing announcing different types of access, so that the occasional user requiring a less personalised service can access the full text from a registered site without needing to remember a password. This is particularly helpful in the interdisciplinary environment that now underpins some of the most exciting research.

Aspects users like about e-journals but don't always get

There are many attributes of electronic journals which appeal to the user as they become more prevalent. Global distribution and speed of access are vital ingredients which are improving as mirror sites are developed. The ability to access from different sites becomes more useful as mobile computing becomes common. Multimedia and additional data have not been very noticeably present[3] but have great potential depending on the subject area. Archaeology, speech therapy and computational engineering are just some of the subjects that can benefit from additional material in appropriate media. Hypertext links and a searching facility can provide the added bonus of speeding up retrieval in the electronic medium. Correspondence threaded thematically is an easy way of following research on a very specific theme electronically but is difficult on the timescale of paper journals.

Recent studies relating to users

It is gratifying for academic users to know that research projects like Café Jus and its predecessors have been looking at the reaction of users to electronic journals. An international project which did intensive user behaviour research was The University Licensing Program (TULIP) collaborative project between Elsevier and 9 leading American universities[4]. Its findings were complementary to the points above. Requirements included ease of use: as intuitive as possible, and preferably using a familiar interface; access to all information from one source; effective search capabilities; high processing and publishing speed; good image text quality; sufficient journal and time coverage; and naturally links to related information. The European Commission's recent study on Strategic Developments for the European Publishing Industry towards the Year 2000[5] also emphasises the user perspective, since understanding users' preferences in target markets can be critical to success. It indicates that each target audience has its specific focus on one or several of the types of added value or functionality of electronic publishing, which include integrated sound, images and text in both online and offline media; hyperlinked, interactive content integrated with services, place and time-independent consumption and downloaded reusable content. In other words, media richness and interactivity are the primary attributes which attract most users to electronic publishing. Again we have a similar set of ideals - here we have summarised the academic's dream!

Related activity in Southampton

At the University of Southampton we are involved in a number of projects, under the broad umbrella of the Digital Libraries Research Centre, which relate to different aspects of improving access to electronic journal articles for the users. Starting at the research end of the publication process, a cognitive sciences e-prints archive[6] is being set up, modelled on the hugely successful Physics Archive[7] at Los Alamos in the US. The established electronic journal *Psycoloquy*[8] is being provided with some added value features. The Open Journal Project[9] is investigating ways in which publishers can produce journals and books, which will easily tie into other publications and network resources, by capitalising on the Distributed Link Service, and by developing a useful set of information-gathering agents. The university is also a pilot site in the ERCOMS electronic reserve project[10] to manage and provide more positive access to short loan items. This portfolio of projects could help enable a change

in the culture by providing easier and more flexible access to e-journal papers and other related electronic documents. Besides these initiatives, several academics are also involved in setting up new e-journals - this will surely help to ensure more interest in the success of electronic journals and put more emphasis on quality aspects.

Some pleas from researchers to e-journal publishers

There are a few messages from the academic researchers that currently seem appropriate to emphasise. Publishers should try to make maximum use of the technology to enable work to be published more widely and quickly and cheaply. Negative budgets, caused by escalating prices, mean relevant research becomes otherwise decreasingly accessible. We would also like help in enabling an environment where collecting our papers together on the Web is a non-guilt-making occupation. It would be particularly helpful to find ways of capitalising on the preprint archives - collaboration can then provide an integrated scholarly publication chain.

Publishers can help change the culture so that it is a positive benefit that many people may want to read an article at the same time - the true 'collaboratory'. The new financial models need to provide mechanisms that do not take research students into penury - its not yet easy to charge a credit card bill back to a department. And finally, publishers can help create some new intelligent agents (both people and their avatars -their virtual counterparts) to help us capitalise on the new resources that they have provided.

References

1. Kouzes, RT, Meyers, JD, Wulf, WA, Collaboratories - Doing Science on the Internet, Computer, 1996 29(8), 40.
2. Harnad, S., Scholarly Skywriting and the Prepublication Continuum of Scientific Enquiry, Psychological Science, 1990 , 1, 342-343 or via http://cogsci.soton.ac.uk/~harnad/intpub.html.
3. Hitchcock, S. Carr, L. Hall, W., A Survey of STM Online Journals 1990-95: the Calm before the Storm. In Directory of Electronic Journals, Newsletters and Academic Discussion Lists, Ed. Mogge, D., 6th ed., 1996, Washington, D.C., Association of Research Libraries, 7-32 or via http://journals.ecs.soton.ac.uk/.
4. TULIP Final Report, July 1996 ISBN 0-444-82540-1 or via Elsevier Science's home page at http://www.elsevier.nl.
5. European Commission, DGXIII/E, Strategic Developments for the European Publishing Industry towards the Year 2000. Conducted by Andersen Consulting, Executive Summary, 1996, Brussels, CEC or via http://www2.echo.lu/elpub2/en/infonote.html.
6. CogPrints Archive via http://cogprints.soton.ac.uk/.
7. Physics Eprint Archive via http://xxx.lanl.gov/.
8. Psycoloquy via http://www.cogsci.soton.ac.uk/psycoloquy.
9. Open Journal Project via http://journals.ecs.soton.ac.uk/.
10. ERCOMS Project via http://ford.mk.dmu.ac.uk/Projects/ERCOMS/.