

## ACADEMICS CAN DO IT FOR THEMSELVES

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*Paper prepared for the UKSG 1994 Annual Conference, Manchester*

*This paper examines the political economy of the serial publishing industry from the perspective of teaching academics. It goes on to summarise the technological developments which are changing our working environment, in terms of production and delivery of teaching material to students, undertaking research, and producing Funding Council key performance indicators. It examines the roles of different players in these scenarios and suggests what areas will be best undertaken by academics and what roles could be undertaken by serial publishers and libraries.*

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### Setting the scene

This little concert piece is a quintet, in that there are five players: the authors, the publishers, the secondary information service providers, the librarians and the users (who might be readers!) We will not attribute to them different instruments implying influence, such as the Albert Hall organ and a piccolo at this stage. As the theme is developed we shall see that each has a role to play, and that this role will change differently. Let us start from the position of a teaching academic who writes papers: an author and a user. (Who can, of course, play two instruments at once.)

What does a teacher do? Design courses and deliver them. That means being up to date in his or her discipline, having an opinion on likely paths of development and being capable of synthesising differing views into something which might approach the coherent. This means reading a lot. Part of delivering a course might include producing a course reader so that participants can read some of what the teacher has read. Under current copyright legislation, this causes a huge amount of difficulty. Teachers have a choice: ignore copyright; tell students to find the piece and copy it for themselves; write their own. The latter is often the preferred course.

This, however, turns the teacher into a writer whose papers are often published in serials. We have an interest in people reading our papers - that is presumably partly why we write. For them to read it they either have to know it exists and want to find it, or stumble across it while looking for something more generally. This means it has to be captured into some system.

As academics we are also researchers. This is a slightly different role from a teacher in that there must be a more significant level of thoroughness and of originality. As a researcher there exists an invisible college, people whom we know and who know us, people whose work we look out for, who we meet at conferences and professional bodies. It happens that our field is partly information retrieval, partly the social and political and economic impact of developments in new information and communication technologies, and in particular, how these two fit together and affect one another. This means the impact of wide area information services. So we are not suggesting that what follows is yet true for all academics, but it points to a picture of the

future with which serials publishers, librarians and secondary service providers must be aware, for it will have an impact on you.

### The Technology

In the past, serials were published by taking an author's text, compositing, proofing, setting a run of a particular size through a metal press, warehousing, destroying the galleys, and distributing. Estimating the run involved differing levels of risk according to market, but destroying the galleys meant that reprints or re-run would mean almost repeating the exercise. The photocopier changed all that, and ever since publishers have been fighting a rearguard action to defend their indefensible position.

There are two theoretical tools that can be drawn on to help understand what is going on: the forces of production and the relations of production. The social relationships which exist as a result of previous developments will resist or favour particular technologies. As one develops it will force pressure on social relationships. Either these change, or the technology is incapable of developing and disappears.

Now more and more baroque institutions are having to be developed, which cost more and more, and which prevent us from getting on with what we should be doing. Defending intellectual property rights can require a police force larger than the entire gross domestic product.

But if the photocopier destroyed copyright, it is as nothing to the impact of what is now happening. The linking together of the telephone and the computer has produced the network. The production of bitmaps and digitised data has meant that the photocopier and the scanner and the fax machine and the printer are all basically doing the same thing. Desktop productivity tools, word processors, database managers, formatters, comms, mean that documents start almost universally in electronic digitised and bitmap form.

Moreover, there is a move towards interconvertibility through a range of filters, with developments that allow "open systems" to a much higher level of functionality than in the past. There is no intention to trivialise the complexity - it is all far from seamless, but the general direction seems clear.

All this has created a new range of information retrieval problems. As the network scales up towards millions of users something else begins to happen. Academics begin to lose their privileged position. This is happening at a time when pressure internationally on universities is producing a shift towards distance learning and reusable objects! Massive expansion of higher education moves us towards a position of a third of a cohort in developed countries having a degree, and China has not come on stream yet.

This expansion in turn produces changes in the way higher education is delivered. The old polytechnics have experienced this to a greater extent as they always started from a lower cash base, but it is beginning to have an impact on even the most well endowed organisations. At the same time a number of serials publishers shot themselves in the foot by unreasonable price increases and in general publishers do not seem to be able to realise a market opportunity in the new technologies.

Similarly the information service providers such as CD-ROM publishers and library circulation control (rather than information retrieval) systems are proving to be very slow in taking up new technologies as they emerge or in attempting to produce industry wide integration tools.

Where data is "published" on the network, rather than being distributed on CD-ROM, there then arise a significant number of design decisions about openness, standardisation, presentation, which are non-trivial but quite different from the issues which concern commercial information providers. An example of commercial issues is the deferment in cash flow of more than 12 months which may result from a move to full electronic document delivery rather than journal subscription. Payments from document delivery are received some time after publication rather than as an up front subscription while further costs may be incurred in network development. In addition to cash flow the control of use, licensing arrangements and intellectual property protection are other commercial issues.

Within the University (and we are limiting ourselves to this domain - public libraries, education, commercial and government

organisations all present different issues which need arguing in different ways) there is an historic division between the computer centre and the library. They were funded differently and have different relationships with their users. Their attitudes to standards, software procurement, project development and measurement of satisfaction are all different. When the computer centre agrees to go ahead with implementing a CHEST deal on "The Times", the result will be quite different from the result of the library buying the CD-ROM. Only the users will have to deal with the results.

So if a teacher now produces a course or a team of researchers are engaged in a piece of research, what is their (our) role as a publisher? We communicate and construct bits of the world in a particular order. These are text files with citations and quotations which start as word processed documents. They might increasingly actually contain dynamic objects and be in multimedia. These are shared as objects, or narrowcasted, or broadcasted. A simple text file will start off in a news group, an IRC or on a bulletin board. This will be entirely contained within one department or available through Usenet News to the whole community.

In Mosaic we have the capability to publish an URL which on its own could contain complete multimedia documents cross referenced by means of hypertext links to related material, or alternatively, to other information retrieval tools such as Gopher, WAIS and Telnet. At present information retrieval is slow, due in part to the application itself and in part to the available bandwidth of the network; the former is subject to constant appraisal, the latter may take slightly longer to fall into line. Whether the URL is published via the National Center for Supercomputing Applications (NCAS) in the USA, or by setting up one's own Mosaic server, (as increasing numbers of universities and research institutions are doing), is a design decision in its own right equalled by that of where to advertise the publication to the desired audience. Announcing the existence of a URL to WWW may be a long way from publishing but chasms of equivalent breadth have been conquered by technological advancement time and again.

### Different roles

So for our five themes, we see what the author does in the old medium, and apart from producing a machine readable text, we cannot yet see what the author, apart from vanity publishing, would do in the new. The infrastructure is just not yet there. But we can imagine likely scenarios. We can also establish that the author publishing to her students, inside her department, is a different publisher from the same person as a researcher to an academic community and to the world at large as part of a larger special interest group.

However the researcher is in a funding environment which requires key performance indicators, and these are published papers. This institution is likely to prove extremely conservative, and involves a conspiracy in which the five players are joined to ensure their survival at the expense of the paying public.

Electronic journals enable user access via networks but do not necessarily involve charges for access nor imply quality via peer review. The inclusion of illustrations is often problematic in terms of storage and transfer speed while the potential growth of non refereed material could potentially overload the networks. Electronic journals would need to be recognised as valid outputs generating KPIs as well as a useful source of access to the work of others. However, there is obvious potential for electronic journals to be the main means of disseminating information assuming the capability of the network to support the traffic and the will of authors, users and publishers to use such channels. Developments depend on their ability to view the technology as a means of diversification rather than a threat.

For the publisher, how to survive without the academic conspiracy seems a much more difficult problem, particularly as Telcos, TV companies, software houses are all now publishers. As the risk factor involved in heavy metal publishing has gone it seems difficult to defend what is often a very poor service - lead times, delivery times, replacement service times.

The major growth area is likely to be in the meta information service providers, but the problem here is how to create an economy of scale while not destroying capacity to generate cash flow. We can see from combinations of

anarchie, archie, mosaic how from the publish end to the get/ fetch end the combination of url, urn and uri will allow for information retrieval through X.500, rfc822 stifs, wais, news, and so forth, but we can also see the need for controlled vocabularies, thesaurus and classification schemes.

The effective retrieval of information depends on the development of user friendly tools providing indexing and filtration facilities to access catalogued and labelled items of information.

Clearly one argument that most of the players in this quintet will return to is the combined issues of quality, integrity, veracity, accuracy and security (qivas). However we must also recognise that they are players with tunes already scripted (a circumlocution or euphemism for axes to grind!) and that the expansion of higher education along with privatisation and competitive tendering is likely to change the whole environment of higher education.

The one role that will hardly change is that of the librarian. In every organisation which has a goal, there will need to be a part which sifts through the world of data creation and builds up collections. With the new media this will become much more a matter of organising meta information tools than replacing books on shelves and sending journals to the binders, but these basic intellectual tasks of understanding users' information requirements and assisting in satisfying them will remain.

Librarians are faced with the continuing rise in demand from users for a widening range of reference material while faced with a continuing decline in spending power. Development of BIDS and similar services could bring on-line end user searching to the library on a large scale. Libraries will become much more computer/network oriented acting as the gateway offering access to units of information rather than units of stock. These electronic aspects of library services may well lead to pressure for the convergence of

library and computing facilities. There is also the prospect that control of information provision charges will move from librarians as the trend continues away from off the shelf information retrieval towards individual document supply.

#### What lies ahead?

So how far are we towards academics doing it on their own? Much closer I suspect than publishers would like us to think. Studies of what uses are actually made of journals collections are thin. Attempts to find out what students, teachers and researchers actually read and how they value their resources are thin. Introducing OPACs and CD-ROMs has resulted in their being widely used, but we have found that students regard reading an abstract as sufficient. Book collections in university libraries are probably more thoroughly used as a result of the increase in student numbers, and the technical shifts in dtp have changed the economy of book publishing. But journals, I suspect, are on to a loser.

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