

## CHANGING ROLES IN THE INFORMATION CHAIN: A LIBRARIAN'S PERSPECTIVE

By Derek G. Law

I've been asked to speak today about the changing role of librarians in the information chain, but I want to broaden that a little to talk too about the changing role of librarians. I shall also discuss the ways in which two national initiatives in the United Kingdom present the possibility of significant central funding going into initiatives to hasten some of these changes. Before I really begin I do also want to make it clear that I believe that there is much which will remain stable in the information chain. There will continue to be great paper-based collections in libraries; we will continue to have large budgets for the acquisition of materials; librarians will still have a role in the organisation, management and dissemination of knowledge. Or at least some of them will.

Let me begin properly then by briefly offering my favourite example of why the information chain is beaking down. Researchers have a fixed amount of time for information collection as opposed to research. Yet the volume of information just keeps growing and growing, by perhaps as much as 12% per annum in the case of scientific research. It was said of Thomas Young, the 19th century physician that he was the last man who knew everything. That may have semmed a little unlikely even then, but at least it was a claim which could be made. That is no longer true in even a single discipline. Take the case of Physics, where the literature has grown steadily from roughly 80,000 articles in 1969 to 150,000 articles in 1991 and *Physics Abstracts* is known as the green slime. Just to read all the abstracts would require one to read one hundred abstracts an hour. To cover a single core journal such as *Journal of Applied Physics* requires a researcher to read two articles an hour every working day. This is clearly impossible.

Let me offer you two figures. It has been suggested that even the world's greatest and largest library, whichever one you think that is, contains under ten per cent of the published output of the world. It has also been suggested that even the best

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Mr. Law's paper was delivered at the Seminar "Changing roles in the information chain" organized by the British Library of Political and Economic Science and the International Committee for Social Science Information and Documentation, London, United Kingdom, 30 March 1993.

libraries record in their catalogues less than two per cent of the bibliographically separate items which they hold. Periodical articles, large areas of archives, separately authored chapters of books and so on are not recorded. Thus we have a position where we hold small quantities of the published record, incompletely catalogued and available only to personal callers at times convenient to us.

Networks then provide a powerful vehicle to remedy this situation. We have taken some of the early steps. The buying in of catalogue records to improve control of what we hold; in some libraries the buying in of serials lists to link to the catalogue to give better access there. But perhaps more importantly we have begun to explore and make available the information we do not possess, the 90 odd per cent held elsewhere. It is already clear from the networks that the problem is not one of availability but of superfluity. The fear which begins to be expressed is that these networks offer or may offer unprecedented riches, unconstrained by time or space and bypassing the library completely. However, the library is a complex organism which has survived four thousand years of evolution and I can see several roles in which we have a distinctive contribution to make as the information chain evolves.

Specifically, these are cataloguing, training and quality assurance. There are many other roles and opportunities which I shall touch on when I come to look at national initiatives, but in these we are competitors, whereas in these three I would suggest that we have a distinctive role. Let me look at each of these in turn.

It seems to me ironic that the computing specialists and network engineers have now concluded that there are no real underlying technical problems in setting up the supernetworks such as the NREN and SuperJANET. What is baffling them is how to organise and control the vast quantity of information which washes around it. As one commentator has neatly put it, "what we have is a flea market and what we need is a department store." There are three requirements for the networked information. We need knowbots, knowledge robots, to search the network for relevant information; we need navigation tools to find our way around the networks and we need filtering tools to limit retrieval to relevant information. To put that another way, we need union catalogues, we need directories and we need abstracts and indexes. I would suggest that all of these form part of our professional stock in trade and have done for generations. Much of the work done on these by computer specialists has been inept, why should it be otherwise, but there is a real need for librarians to be much more involved in the design and implementation on these tools.

The second area to look at is training. To learn to use a single major library has never been easy. To learn to use the resources of the world will be orders of mag-

nitude more complicated. The skills of information management and information literacy will become essential to the management of teaching as well as research. But these skills are not innate, they have to be taught and I believe that this is a role which can be developed by librarians.. It almost certainly means some shift of resource away from research and into the infrastructure of training - always difficult to achieve. Part of the answer is generational and it will slowly but surely be recognised that some of the most important research skills are those of information management and as junior researchers gain seniority, the new skills will become more commonly expected. Part is elitism, which will not disappear. Until I was about thirty I thought that all heads of department and even more eminent beings were attractive women aged between 18 and 25. This was simply because most heads of department don't visit the library but send their secretaries and technicians. They are insulated from the pressures which fall on more junior staff and we shall have quite a struggle to convince them that shifting resource into areas such as training and away from departmental budgets will be beneficial.

The third area I want to suggest we can have a role in is quality assurance. The trouble with network publishing is that everyone can do it. One of the great merits of conventional publishing is the implicit and explicit quality assurance. We know what kind of quality and attitudes to expect from a publication from the Adam Smith Institute, as we do from Oxford University Press. Once the markers go, that understanding goes too. Electronic material is also volatile in a way that print on paper cannot be. Library network bulletins are full of sad little tales of discovery. Of the discovery that the latest release of a CD-ROM or a tape from the most reputable of publishers is in some way defective or incomplete, or that the new release of software to control the data has unexpected and rarely beneficial side-effects. That problem can only get worse. Who is to measure the quality of data and the software to manage it? Who is to control and to co-ordinate the sharing of information about what is good, bad and (more commonly) indifferent? In a sense we have done that for years through our acquisition policies and it seems quite a small step to extend that into the electronic world.

In my final section let me then turn to some of the national initiatives in the United Kingdom, which are nudging the system in the direction I have described. First of all there is the Follet Committee which is reviewing the state of libraries in the Higher Education sector on behalf of the Higher Education Funding Council, the body through which state funds are channelled to the universities. It is expected to propose a number of initiatives which will require funding. One of its concerns is how to tackle the issue of the training and retraining of librarians in information management skills. For all the reasons I have been describing it has

reached the conclusion that a key need is to ensure that librarians are better equipped with this new skills and are then in a position to pass this knowledge on.

The next area of concern is the electronic journal. The arrival of the electronic journal has been more often predicted than the second coming, with just as many and varied views of what it would be. In the narrow sense it has arrived in that there are several dozen properly referred electronic journals, although asking anyone to name anything other than Post Modern Culture and Psychology is liable to produce extended silences. Although there seems to me to be real doubt as to whether the electronic journal will reduce costs in any way, I think it likely that the Follet Committee will recommend a significant experiment in this area, perhaps with the support of one of the Research Councils. It may be that we need some fresh thinking here. We seem to be falling into the classic trap of new technologies which is acting as a substitute for the old. What we need is SuperJANET experiments which allow a new style of article to emerge with sound and moving images as well as tables and graphics and illustrations.

The next major area likely to be funded is to do with document delivery. In the British Library's Document Supply Centre at Boston Spa we have a document delivery service which is the envy of the world. However, we are so overwhelmed by it that we have not experimented enough with alternative models. The arrival of commercial players, the changing economics of regional and subject consortia and the possible funding of the database of the major UK research libraries all lead one to suppose that we shall move towards a more distributed model of document delivery and that major experimental services will be funded.

In both of these areas, copyright is seen as a significant stumbling block. Individual publishers keep assuring us that they feel optimistic that change will happen and that mechanisms will be found. This news does not seem to have percolated up - or is it down - to their representatives on official bodies and much work remains to be done. However there is a danger of being over-impressed by the science model of research. The great bulk of material held by libraries is either out of copyright or unpublished and many of the technical and administrative issues can be addressed without touching copyright. For example, most research libraries hold major back runs of older journals and many of these must be duplicated. A programme to digitise these would allow great space savings to be made, as well as making the material more available. To store duplicated runs of journals in expensive space in the centre of any capital city is the economics of the madhouse.

There is likely to be an initiative in the area of creating subject information servers, allowing librarians to bring together some of the roles I described earlier.

Some of this will depend on the creation of network information retrieval tools and that provides a natural link to the JISC, the Joint Information Systems Committee of the Higher Education Funding Councils of England, Northern Ireland, Scotland and Wales.

The JISC has been set up to manage JANET, the Joint Academic Network and also to create and manage SuperJANET, its successor. Its other main activity and one with a large budget line is to create and manage networked services and tools. A large range of these already exist and are very heavily used. I will describe them briefly although the details are less important than the fact that these services attract huge numbers of users

HENSA (Higher Education National Shareware Archive) - stores shareware and public domain software. Based at the University of Lancaster it has over 40,000 accesses a month.

NISS (National Information on Software and Services) based at the University of Bath, holds everything from data to acting as a gateway. It contains such heavily used items as Electronic Yellow Pages and has an experimental WAIS (Wide Area Information Server). Again it is used by tens of thousands of people each month.

NISP (National Information Server Project) / Mailbase. Another great success in introducing whole communities to electronic world, this project based at Newcastle University has developed bulletin boards and mail servers which have been introduced to whole academic communities. This work has been strengthened recently by the decision of the Economic and Social Research Council to appoint an IT Officer attached to the project. His role is to develop training programmes for the social science community and to set up closed mail lists for different groups and in general to encourage use of the new technology and the exploitation of it to the full.

AGOCG (Advisory Group on Computer Graphics) and Multimedia. This is a large and growing area of interest, with many groups involved and a large expenditure in the area. In addition to funding some project work, the JISC funds a co-ordinator post at Loughborough University, which aims to bring all the different groups and agencies together to ensure consistency of approach and minimise duplication.

SGML (Standardized General Markup Language). We fund a support group at the University of Exeter, which is experimenting with different applications of this key standard.

UKOLN (UK Office for Library Networking) is jointly funded with the British Library Research and Development Department. This group at the University of Bath has done important work in helping to define future roles for libraries and librarians. It acts as a focus for discussion as well as being a research laboratory.

In addition to these existing services, the JISC will be asked in April to set aside a major budget line for the creation of networked tools and standards. We hope to begin national level work on areas such as a European Topnode Directory, a national and topic based gophers, SR/Z39.50 standards and so on. None of these acronyms is as important as the fact that we shall be committing resources at a national level to making networked information easier to use and retrieve.

Finally I must mention datasets policy. The huge success of the BIDS (Bath Information and Data Services) ISI service is well known and we have begun the procurement of other datasets. Within a short time the Bath service became the largest ISI database service in the world and currently serves some 3000 users each day. We have a national policy which aims to acquire up to twenty datasets and to make them free at the point of use to mass markets of students. This is a huge topic in its own right but suffice it to say that we have a clear policy and a large budget in order to bring relevant data to every group in higher education.

I have carefully avoided an examination of the role of the library as information compiler and publisher. Some aspire to that but it seems to me a problematic albeit a possible role for most libraries. In any case as I have been trying to demonstrate it seems to me that there is more than enough to be going on with in the way of new challenges.

In sum then, some millions of pounds are available in the UK to create and promote activities over the network. We are dealing with huge masses of data and huge masses of users. Although the ambition may be to provide information at the desktop, there will remain a major role in training, defining networked tools and in providing quality assurance for the data. At the same time the traditional roles of the paper based library will remain. Libraries and librarians are locked into a growth curve rather than a decline as we seek or are given new roles in the electronic information chain.

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