

Information Management and the future of libraries

D.G. Law

Much of what I want to say today is rooted in my experience in higher education and is particularly applicable there. However, I hope that I will be able to demonstrate that the examples I use and the context in which I am speaking can be more generally applicable and that to a greater or lesser degree the problems we face in higher education are to be faced by all libraries. I should also say that much of what I have to say relates to that excellent document, the Information UK 2000 report, sponsored by the British Library Research and Development Department. I was one of the team leaders in that exercise and it forced me to do quite a bit of thinking about possible futures and that is really my theme for tonight. In a sense what I want to present you with is a SWOT exercise - Strengths, Weaknesses, Opportunities and Threats.

One of the great strengths of libraries is their sense of continuity. Only a few institutions have retained their essential features over many centuries: the Catholic Church; the Parliaments of the Isle of Man and Iceland; several Swiss cantons; seventy European universities and most libraries. Libraries are recognisable and relatively changeless institutions. The people who used the great library of Ashurbanipal would understand precisely what we were about, because our practices don't change too much. The Royal Library of Ashurbanipal was reference only - not too surprising when it consisted of tablets of stone. By the time of the Great Library of Alexandria, the branch library and multi-site operation had been invented, and along with it the excuse that whatever you want is at the other branch. Moving on briskly to the thirteenth century, the University of Paris invented the student short loan collection and copyright infringement with squads of monks in the scriptorium copying out passages from manuscripts at the equivalent of ten pence a page. And all the time St Augustine complained about author's rights. By the sixteenth century library discipline was given a new twist when St Andrews University had Sir Robert Spottiswoode beheaded for not returning library books (he didn't offend again I might add). St Andrews also had the distinction of making the first recorded periodicals claim, in the seventeenth century with the very polite note to

the publisher saying I have issue 12 in two copies but no copy of issue 11. By the nineteenth century we were evolving the great universal classification schemes including that of the British Foreign Office, which regrettably never caught on. It, of course, is the alphabetic scheme which tacks on at its end as Class W - Women, Witches and the Working Class.

The point that I really want to make is that, despite the technology, libraries today are not fundamentally different from the great library of Alexandria of two thousand years ago. Our evolution has been extremely slow and studied. Yet, since the early 1960's we have flattered ourselves that we have been forging ahead of the rest of society with our innovative use of library automation. But for the last twenty-five years libraries have in fact engaged not in automation but in mechanisation. There is a fundamental distinction here. When we mechanise, we take the same process and make it faster, when we automate, we change the way in which people live and act. Librarians have by and large spent a generation developing library housekeeping systems with all sorts of fancy features, but these are gold-plated dinosaurs and they must now evolve or die. As a general rule, even where library computers exist and in most libraries they do now exist, library users still visit the library, still go to a catalogue hall and write down the call number on a scrap of paper, still go to the shelf, still find the book they really want isn't there and still come to the issue desk to argue about paying fines. Yet most of the library housekeeping could be done from the office or home using wide area networks, so that when users come to the library their time is spent productively rather than in administration. Nor is this by any stretch of the imagination the prerogative of higher education. Some of the earliest and best thinking was done by Ken Dowlin, who created Maggie's Place at the Pike's Peak Library in Colorado and networked information to the community.

That slow pace of change is a great strength. Computer Centres have existed for barely forty years and already are beginning to disappear in the face of networked distributed computing. Libraries have been around for four thousand years and everybody knows what they are and what they are

for. Even when people are wrong in their understanding of what we do, "library" is a concept they feel comfortable with. Of course that strength is also our greatest weakness, thanks to resistance to change, as much on the part of our users as ourselves. We are typically large organisations and again that compounds the difficulty we face in adjusting to rapid change.

And make no mistake, society is changing rapidly, but as the hackneyed phrase has it, these are not problems, these are opportunities. The opportunity before us is to make the library the focus for knowledge and information within the societies of the future. Central to an understanding of what we are doing is a belief that we have reached a significant breakpoint in the organisation of society and that the major post-industrial societies are becoming information societies. This has fundamental implications for libraries. The agricultural age was based on ploughs and the animals which pulled them; the industrial age on engines and the fuels that fed them; the information age which we are creating will be based on computers and the networks which link them. Allen Bromley sums it up neatly, as this transparency shows:

The future national high speed computer network could have the kind of catalytic effect on our society, industries and universities that the telephone system has had during the twentieth century.

It is almost impossible to exaggerate the speed and scale at which computers have taken over society. Essentially invented in the 1940's with machines that occupied several floors of a building, you can now get more power in a central heating controller, than in the first computers. With insidious ease the microchip has come to dominate all aspects of our lives; bank transactions, car engines, holiday bookings, telephones, power stations, industrial production are all in whole or in part absolutely reliant on computers. A recent study by Professor Jack Meadows of Loughborough University shows that 91% of scientists have given up using pens and typewriters. Their reports are produced exclusively by word-processor and their colleagues contacted by telephone or electronic mail. Literally millions of computers now exist in European households. Late last year, a contest was

held in which ten computers and ten humans held a short conversation with ten human judges. Five of the judges were unable to distinguish half of the computers from half of the humans. We are beginning to produce machines capable of rational discussion as well as obeying orders. A great revolution has taken place around us while we dozed.

The shift is like the shift from the Ptolomeic to the Copernican view of the world. In the Ptolomeic vision, the Library, like the earth, sits at the centre of the Universe and everything revolves round it, users, vendors, faculty, college administration. The analogy is made even more apt by the fact that judging from the recent Carnegie report on American library use, patrons do in fact orbit rather than enter the Library. Consider then the Copernican universe where the user like the sun is at the centre of the universe, and sits at an office terminal surrounded by information, books, document delivery and library services. The example of this I like is quoted by someone I used to work for. She cites the case of the archaeologist proposing to travel to Crete, who might reasonably expect to find integrated and compatible information at the desktop, showing geography, climate, soil, excavated sites and their results, museum holdings, flight schedules and local bye-laws as well as a list of citations showing where the documents are available. You can multiply those examples for any discipline. The future of the library lies in being at the heart of these knowledge based information systems. Much of that is already possible. I am in daily contact via electronic mail with colleagues in Greece, Australia and the United. Developments such as Internet and the potential of NREN will open up revolutionary potential not just for a minority of addicts like me, but for everyone. An article in a recent issue of the *Economist* summed it all up neatly:

Far from being dusty storehouses the
world's great libraries are both the
pilots and the lifeboats of the information
age. Do they know it and can they cope?

The threat we then face is that of ignoring change. We have done that more or less successfully for centuries. Libraries have traditionally placed their emphasis on acquisition and preservation - a custodial role, guarding the carefully gathered knowledge and wisdom of society. With our long history and perspective we see that books and manuscripts are permanent while their keepers are transient. But I suspect that in many ways that world has gone for the simple reason that we have lost our monopoly as the storehouses of knowledge. That is not entirely attributable to computers. It has as much to do with the spread of modern communications from radio to camcorders. Human knowledge is increasingly available in a multiplicity of media and from a variety of sources. This again is a recent change. At first we managed to stem the flow by setting up more libraries and archives. The Houston Picture Library, the BBC Sound Archive, The BBC Television Library and so on. But, Canute-like, we have failed, because the sheer availability of information has washed over us. Most library users - far less non-users - spend more time with tv or computers than with books. We have unknowingly developed an aliterate population, which gathers most of its information from other media than the printed page. But the information handling skills associated with the printed word apply to other media as well. These other media could and may develop in isolation, but they need not. However, if we don't offer and use our skills, other people will. For example, I used to work in the University of Edinburgh where the campus network had seventy computers attached to it. One of these held the library OPAC, but others held astronomical catalogues, campus information bulletin boards and telephone directories, a software catalogue, chemical formulae and even train timetables. There were seventy potential rival information sources all with relevance outside the immediate department in which they were based. Most of them however had no idea how to catalogue, manage and control the information they possessed and were only too keen to see the library step in and apply standard cataloguing and management of these services into an integrated whole. I certainly want to work in the sort of environment which sees the role of the librarian as to do with information handling skills and not as museum custodians, niche players with a diminishing clientele for anything other than the undergraduate short-loan collection.

Libraries are traditionally seen as the heart of the university. The danger with this analogy is that if we fail to meet the information needs of consumers, they will perform a heart by-pass operation and the aforesaid organ will atrophy. My vision centres on communications technology, the veins of a future information complex, linking a multiplicity of information sources. David Stam has written of a great chain of knowledge making information available and I hold to that view. It is a paradox of the creation of on-line catalogues that they make the catalogue in one's own library less relevant to the institution. Access not holdings becomes the key strategy. A book or journal still listed on a card catalogue and not on an OPAC, or a book in a reserve store at twenty-four hours notice is less accessible than an item on an OPAC in the next town which can be faxed directly to the user. An on-line database is available on the desk-top and not even five minutes walk away in the library. I'm sure that David Stam is right in his view, but it requires very careful planning and is not something that can develop haphazardly. I am convinced that document delivery techniques will make great strides in the next decade and the ability to deliver not just full text but also high quality graphics over broadband or satellite links will be a crucial catalyst in determining how researchers manage their information needs.

The concept of making information available directly to the end-user, without having a librarian as intermediary is not a new one or even unique to the United Kingdom, but I thought it might be useful to give a little background history to the first national deal to be set up to move towards the Copernican world which I have been describing. The first deal to be organised concerns the ISI database, which covers Current Contents, Science Citation Index, Social Science Citation Index and Arts & Humanities Citation Index. It was set up by the Computer Board, a British government body set up to organise the funding of computing in our universities. This deal gives everyone in higher education - about a million users - unrestricted free at point of use access for twenty four hours a day to these databases. The result was quite predictable; use was and is shooting up and now runs at 1300 logons a week, each averaging twenty minutes. Negotiations are now in train on adding other

databases. Where end users can avoid the library they will. We already plan further experiments to see whether end-users will then link these searches to electronic mail and do their own inter-library loans, perhaps paying by access or visa. They could have things on the desktop within twenty-four hours rather than the week or so that the library takes as middleman. The next deal we hope to complete is for Medline and in this case the objective is to extend its use to hospital staffs and general practitioners. Incidentally, these datasets are available over JANET, the Joint Academic Network. I mention that because the first public library has just joined JANET - the Mitchell Library in Glasgow. As more public libraries join, the greater the value of the system.

I have been developing with you the concept of the library without walls, the glass library, the virtual library, where in a sense the librarian has no role. A phrase that sticks in my mind from library school days, but I can't remember the source, was that the future role of the librarian was to stand at the man-machine interface. That may have been briefly true, but will not be a pattern for the future. The user will stand at the interface, perhaps in some cases with expert systems, but certainly not with a librarian in the way. I believe that is as it should be. We don't impose professional assistance on every user of a reference collection and I don't see why we should attempt to impose it on those who use electronic media.

Well that's the slightly jumbled SWOT analysis. Where does it lead? Let me turn finally then to some solutions and I believe they exist. We don't have to go like lambs to the slaughter, we can be the kings of this particular jungle, the lions of new technology. The sort of situation I have been describing immediately poses the question of what role the librarian can have in this attempt to create a focus for knowledge and information. The role I see is threefold. Firstly there is a straightforward educational role. The library has the opportunity to become central to the teaching process. Most Faculty still haven't discovered moveable type, they rely on lectures and the oral tradition. There is a lot of scope for moving them on to the culture of the book. While that is happening there are enormous opportunities for the library to train and educate in the use of computer based knowledge

systems and information management. In practice this will often be done in co-operation with faculty members. People have to be trained to acquire information; it is not an innate skill. Under the new plans for higher education in Britain, there is to be a deterioration in staff/student ratios as inevitable as it is undesirable. The consequence will be a switch from teaching to learning, from small group teaching to self-motivated learning. Equally inevitably this will lead students into libraries and computer centres, where we will be expected to pick up the pieces of this change. I don't expect that we will necessarily do more teaching than at present, but I do assume that we will be expected to provide much more support for the actual learning process.

Next, the information explosion is not just an explosion in the creation of knowledge but an equally seismic upheaval in the accessibility of knowledge. In the past libraries have broadcast knowledge. We buy books, stick them on the shelves and hope someone will come along to use them. I believe that the future lies in narrowcasting knowledge, for the librarian to begin to make qualitative judgements in tailoring the range of information to meet the needs of clients. This introduces my second area, which is value added services. Although all these shiny new computer systems will be readily available, there will be many people who will be too shy, or too lazy or too inept to get to grips with them, or who will want to learn only a few basic skills. If the library can offer those services economically and efficiently, it will find customers. It is very easy to be persuaded by the zealots of the new technology, the technobrats that they can solve the problems of the world. We tend to forget how much effort users must invest in learning to use new systems. Many of them are not willing to spend even two days of their life learning how to use a word-processor package, but will be willing to harness the expertise of others. A great deal of work will be needed to turn the great swamp of data into information. At least two US companies have already been set up to act as information refiners. We can adopt that role as one of our major activities.

The third role is in quality assurance. Professor Meadows at Loughborough has already done some work on this and he cites two interesting examples. You remember the recent controversy over

cold fusion. By the time this reached the press, the scientific community had already examined the claims and found them false. This was done quickly via electronic mail and bulletin boards and far faster than the conventional refereeing and publication process would allow. How can we manage the information in that activity? More worryingly, Meadows has found that some of the misinformation about AIDS originated from scientific bulletin boards. Because it was not refereed, its quality was never validated, but simply assumed. Providing reliable navigation through this new uncharted electronic world will be of increasing significance. Another area in which we may be interested is that of ethics. You will all be familiar with the sort of debate going on in the area of medical ethics - everything from surrogate motherhood to genetic engineering. Virtual reality is already beginning to produce similar issues. At present virtual reality is used only for children's games, but what happens when it extends to other areas? We allow people to borrow books about murder - will we allow them to borrow software which lets them commit murder albeit on a sort of hologram. Will we allow students to practice operations - presumably yes. But will we allow the general public to do the same. When any sensation can be recreated, what controls will we or indeed society and local officials put on that.

I've been suggesting to you that society is moving from a post-industrial role to an information role - and indeed in some parts of the Third World you can see that information world co-existing with agricultural societies, with village doctors receiving assistance via mobile ground satellite dishes. Libraries have lost any monopoly they might have aspired to in storing and accessing information. There are just too many alternative ways of accessing data. And make no mistake the data exists. One of the things we have failed to notice is the great squads of Taiwanese, Indians and Filippinoes keying in data from the printed page. We then have two choices; we can either retreat to a sort of museum and custodial role handing out recreational and student textbook material to a population of diminishing literacy (since literacy will decreasingly represent an equivalence to knowledge) - or we can get out there and claim the high ground.

Let me conclude then with one of Mae West's more quotable remarks. She once remarked that when faced with a choice between two evils, she always picked the one she hadn't tried before. Put another way, it seems to me that we have little to lose by embracing this shift in forms of information and everything to gain in using our unique professional skills to manage the information sources of the future.

D.G. Law

King's College London