
Resourcing the Information Explosion *

DEREK LAW

King's College, London

THE information explosion is hardly a new concept, but just to give a feeling for what that means I thought I would begin by mentioning one fact which I came across recently. Half of medical knowledge, as recorded in *Index Medicus* is fifteen years old or less. Thus a doctor who qualified in the mid-1970's and had not kept up with the literature would be aware of less than half of medical knowledge. That is surely a frightening concept.

I have been asked to look at how we can solve the problem of funding the information explosion and in particular the expensive new technologies which are associated with it. There are four aspects which I wish to address: Firstly, I want to look at the funding of libraries and at how

we can look afresh at resource issues, including revenue generation. Secondly, I want to look at what we can do within our organisations to persuade them that the funding of information is not exclusively a library problem and to look at how a proper articulation of the issues may confront organisations with new choices. Thirdly, I want to look at how technology can be used as a tool in this matter to develop newer and stronger libraries, in particular through resource sharing. Fourthly and finally I want to look at how technology has begun to democratise information and at the threats and opportunities that the technology offers to libraries. My context and examples are drawn, inevitably from the United Kingdom; I do not propose our solutions and attempted solutions as models, but merely as one view of how to address these very complex issues.

Libraries are resourced in a whole series of ways. The items which are

* Comunicação à Conferência da LIBER 1991, Padua, publicada em *ERLC: The LIBER Quarterly*, 1 (2) 1991.

fairly routinely under library control such as books, periodicals and binding, form fairly conventional budget heads which the library often manages; staffing may also come under library control. But there are a whole series of other resource costs such as space, cleaning, telephones, portering, personnel management, security, buildings maintenance, minor works, heating and lighting, which very often are the responsibility of one or more other budget holders. In most organisations budget responsibility, once assigned, tends to be demarcated in fairly rigid vertical divisions. It is in breaking down some of these barriers to allow a fluid and dynamic horizontal distribution of funding that the first solution to funding the information explosion lies.

Half of medical knowledge, as recorded in *Index Medicus* is fifteen years old or less. Thus a doctor who qualified in the mid-1970's and had not kept up with the literature would be aware of less than half of medical knowledge. That is surely a frightening concept.

Even within the «classic» and traditional budget heads the librarian does not always have full budgetary control. It may be useful to look at three models of how library budgets are organised. In practice there are

almost as many ways of managing funds as there are libraries and so the three models are more accurately points on a spectrum. Nevertheless, they should show that while we may face a common set of problems, there may not be a simple set of answers. A whole nexus of historical, personal, professional and organisational issues will determine how the library is treated within the organisation and it is therefore dangerous to push generalisations too far.

Librarians are often thought to be mainly history or English literature graduates. In order to confirm this, I have chosen historical models. At one end of the spectrum is what I call the feudal model. In this type of library, typically a small library run by someone in perhaps a second professional post, the budget is considered the business of the organisation not the librarian. The function of the library staff is to manage professional concerns and to leave the administrative ones to others. Typically there is no fixed budget. The library has a fixed staff establishment, an agreed list of journals and it buys books at a rate monitored by the institution's finance department. The Library Committee is often quite powerful and its Chairman may well negotiate with the administration over increases in the number of journal subscriptions. Any revenue raised, perhaps from services such as photocopying, is simply retained by

the administration. Central and overhead costs are ignored.

In the middle of the spectrum is what I call the colonial model, where the library is moving towards independence, but there is still some external administrative control. Here the library has control of all but staff costs. The administration reserves the staff establishment and staff budget to itself, but concedes control and management of the rest of the money to the library. Even here it is not too untypical to find that the budget is allocated to subjects by formula and that the librarian has very little chance to practice virement, that is the movement of funds, between the budget heads. Revenue generation may be encouraged, but there is no common practice of whether it is retained centrally, offset, or retained by the library. Each year the Library will have to negotiate what it is to receive in funding and will be told what staff establishment is to be allowed and what staff savings may have to be made. Every so often the staff budget will be frozen or reduced in order to meet a crisis elsewhere in the organisation. Central costs are again normally ignored with the possible exception of telephone charges.

At the other extreme of the spectrum is what I call the imperial model. Those in British higher education libraries will recognise it as a sort of Thatcherite model. It has some elements of the cost centre to it.

The library may be on a fixed percentage of institutional income or it may negotiate each year, but however the figure is arrived at, it then comes under control of the Librarian who manages the sum as a package, balancing the needs of staff, materials and activity. It is assumed that budgetary control is a professional and managerial responsibility. Revenue generation is positively encouraged and the library is allowed 100% retention. Central costs are increasingly attributed to such cost centres, but not funding for major equipment purchases.

A whole nexus of historical, personal, professional and organisational issues will determine how the library is treated within the organisation and it is therefore dangerous to push generalisations too far.

The first two models are tied to fairly traditional views of the library and fairly traditional management practice. The third model is gaining favour, at least in British higher education, as managerial concepts and practices take hold. Cost centres are created, budget holders designated and they are then left to get on with things. In some cases there is a set of agreed management goals, in other cases these are implicit, but the general practice is to give a total resource envelope to

a manager and then leave the manager to define how the service goals are to be achieved. These are not necessarily common to all libraries.

I am sure that one of the besetting sins of librarians is our tendency to think small and that affects our ability to fund new information sources and major capital projects, although they are a tiny fraction of the cash flow of most organisations.

It is with the funding of non-book materials and electronic media that we seem to have the most trouble. Let me look at the elements which have to be funded when looking at electronic resources. These are any combination of hardware, software, data, telecommunications, consumables, staff training, user instruction. For the moment I exclude major capital provision for large library housekeeping systems. Well the first rule of creative accounting is the Humpty Dumpty rule. You remember that in Alice Through the Looking Glass Lewis Carroll has Humpty Dumpty say «When I use a word, it means just what I want it to mean, — neither more nor less». Well one of the advantages of new media is that they do not fall into the traditional budgetary divisions of books, journals, binding, staff and equipment with any ease. Just for the sake of argument I have created a little ma-

trix to show how each of these items can be charged against a number of budget heads. The case may, of course, have to be made that, say, access to a database which replaces a journal subscription be charged to the traditional periodicals heading, but a glib tongue and economy with the truth have always been professional assets.

	Books	Periodicals	Binding	Staff	Equipment
Hardware	+	+	+	-	+
Software	+	+	-	+	+
Data	+	+	+	-	+
Telecoms	-	+	-	-	+
Consumables	+	+	+	-	+
Staff training	+	-	-	+	+
User training	+	+	-	+	+

Now the point about this tabulation is not whether one agrees or disagrees with it. A case can be made for assigning charges in whole or in part as shown; the important point is that the traditional divisions simply break down in the face of new media. You can buy the Oxford English Dictionary on a pc, so the pc which you require for it can be part of the book purchase. The same argument applies to say *Current Contents*. Since buying some databases saves on binding costs, the charge for data can be lodged there; or the whole cost may be chargeable there. Finally, if you are really clever, you might swing the whole lot onto an equipment grant.

I have spoken on other occasions about the difficulties of major capital investment and of my belief that large sums of money are only difficult to raise because we think they are¹. I am sure that one of the besetting sins of librarians is our tendency to think small and that affects our ability to fund new information sources and major capital projects, although they are a tiny fraction of the cash flow of most organisations. There is I think an interesting and instructive comparison with computer centres. It is taken for granted that computer systems cost money, so that it comes as no real surprise to an organisation to receive a request for several hundreds of thousands of pounds for a new computer system for the Computer Centre. The answer may well be «no», but the request is not seen as unrealistic. Our normal library bids are for much smaller sums and there is no climate of expectation that the library will in future require to conduct large and expensive procurement exercises every few years.

Now if that is true of hardware, it is even more true of data. Again, thinking big can be part of the solution. For some time King's College London had been trying without success to find a way to afford the tapes of Science Citation Index to mount on-line on the campus network. Effort was then switched to attempting a deal for the whole of the University of London. That

looked as though it might prove practical, and indeed the University got to the stage of agreement with another major university library to ensure financial viability. However, in the end, partly through a series of fortunate coincidences, it proved simplest to arrange a deal for the whole higher education community of the UK. The Computer Board was persuaded that the provision of data was a good thing and within a matter of weeks found an extremely large sum to allow every academic in the UK to access every major ISI product, apparently free of charge. We had broken out of the vicious circle of doing only what we could afford, to a world where the logic of the argument determined what to do. If the argument is convincing the money is found.

Charges are not simply designed to raise revenue and make services self-financing, they may also, of course, be a means of depressing levels of use.

Some libraries have responded to the problem of funding electronic media by charging for services. This is not, of course a new activity or indeed a new debate. I have always sided with those who oppose charges, although I know this to be a rather irrational response. In practice libraries have charged for services for years. Consider this partial list,

which could readily be expanded. Note too that many of these are «old» services and not the sunrise services of the new technologies and media:

- Reservation postal costs;
- Photocopying;
- Borrowing by outside readers;
- Evening/weekend opening;
- Inter Library Loans;
- Hiring equipment e.g. typewriters;
- Hiring space e.g. study carrels;
- On-line searching;
- CD-Rom printing.

In truth the only valid debate is on how library services are to be paid for, not whether.

Charges are not simply designed to raise revenue and make services self-financing, they may also, of course, be a means of depressing levels of use². I have always opposed such charges for two reasons. Firstly we tend to charge for services which we can easily identify and cost, rather than those which represent added value. Secondly, there tends to be a heavy administrative overhead in recovering charges and we often finish up with a marginal net gain in revenue and a hidden but substantial loss of opportunity costs. However, there is another side to the debate and De Gennaro³ has, as

usual, provided an illuminating overview of the topic. Most librarians tend to have a knee-jerk reaction in favour of freedom of information and of publicly funded services providing information freely to all as a right. The information industry, publishers, government and even some authors tend to view information as a commodity with a value and therefore a price. However the striking of postures is not really helpful and in practice there should be no real villains in the argument. No library is free; they are simply paid for in different ways and most libraries do raise money in some way — if only because copyright legislation requires publicly funded libraries to charge for photocopies. In truth the only valid debate is on how library services are to be paid for, not whether⁴.

The British Government recently published a discussion paper on public library funding, which opened up an illuminating debate on the notion of core and value added services, for which charges would be levied. This has also spread to the British Library⁵ where the latest five year plan looks at the notion of charging for non-core services. Its approach is particularly interesting, for, rather than just settle for levying charges on areas where costs are readily attributable, it attempts to define core and value added areas then goes on to propose charges for the latter even where, as with refer-

ence enquiries, charging mechanisms may be very hard to devise. Now it should not be thought that the raising of revenue is a substitute for adequate core funding, but it does allow a redefinition of the boundaries. We have tended to charge for new services such as on-line because they are easily definable. We have tended to impose charges for activities such as genealogical searches because we consider them outside our core activity and a distraction from our «real» duties; and we apply a sort of inverse charging when we refuse to compile a bibliography from the printed sources for academic staff, who we feel should do their own research; this preserves staff time for other, more central, activities. Rather than this careless mixture of postures and attitudes, it makes more sense to look at the issue from scratch and decide which services are basic — and on-line might be basic in some organisations — and which are value added — and reference work might be so defined in other cases. Having done that we can then look at effective charging mechanisms.

I certainly find this a much more comfortable and rational approach. For example, in my own Library I can argue that my core services are defined in terms of the constituency we are funded to serve, but that everyone else will have to pay. Or it can be argued that there are services — typically rush or urgent services

— where a premium is charged to all users, irrespective of origin. It also allows the creation of services for outside users on a full cost recovery basis, but which are provided free to the funded constituency. Thus one might offer a free inter-library loan service, but charge £5 or £10 to guarantee that it will be delivered to your desktop within 24 hours.

It makes more sense to look at the issue from scratch and decide which services are basic — and on-line might be basic in some organisations — and which are value added — and reference work might be so defined in other cases. Having done that we can then look at effective charging mechanisms.

I would now like to move on from the issue of funding, revenue generation and the debate on charges for services, to my second theme of changing this away from a library issue. What is really required is a culture shift. Bob Hayes, former Dean of the Library School at UCLA, has estimated that 10-15% of the institutional budget in a university goes on information in the broad sense⁶. Until now, organisations have tended to treat the library and information as some kind of synonym and assume that the 3,5%-4% of the budget going to a typical British university library is an acceptable

overhead. When all the bits and pieces are added up, it comes as a salutary shock to institutions to discover the truth of Hayes' calculations. The next realisation is that while 4% can safely be left to the Librarian, 15% of budget demands an institutional response. I am sure that equally frightening figures could be found for other types of organisation, most of which find 10-15% a literally incredible figure when presented with it. However in the higher education sector at least, there is a dawning realisation that Hayes' argument is just and that such levels of resource require new institutional policies and management. The responses to a recent survey by SCONUL and IJCC⁷ addressed to University Vice-Chancellors demonstrated a genuine desire for initiatives in this area. It seems to me quite possible that the so-called MAC initiative to force the pace of automation in university administrations may be followed by another in the area of information management and this can only be to the good. A number of institutions have, of course, begun to act in this area already, and the debate is one strand of the logic which has brought a number of university library and computer centres together in various types of administrative structure. Now that provision of information is no longer synonymous with its possession, we have to nail the myth that all libraries are only about book collecting, great

prairies of information where academic herbivores come slowly to chew the intellectual cud of their predecessors. We need to create a climate which is receptive to the notion that we are a dynamic link in the information chain.

Now that provision of information is no longer synonymous with its possession, we have to nail the myth that all libraries are only about book collecting, great prairies of information where academic herbivores come slowly to chew the intellectual cud of their predecessors. We need to create a climate which is receptive to the notion that we are a dynamic link in the information chain.

The problem I identified at the very start of this talk was the fairly rigid vertical division between different budget heads, not all of which were «owned» by the library. If that can be broken down so that horizontal movement of resource becomes possible between budget divisions, then the option of funding electronic media is seen simply in the context of appropriateness and not as a sort of incubus. The solution is not necessarily to seek additional resource but to redistribute existing resource. One also needs to look at a whole series of educational issues, about the availability of computers to students,

about drives towards student centred learning, about the availability of software.

Such total resource management seems to me the model that we must seek in looking at the introduction of new electronic services. There is, after all, little point in such services unless they are better or cheaper or quicker than the traditional ones. The problem then to be addressed is whether control of the total resource is achieved through a series of turf wars with the other budget holders — a bruising, but to some enjoyable process — or whether one addresses the underlying issues as part of the more general institutional process of reconsidering resource issues. Make no mistake that in higher education throughout Europe, the slow ageing of the population will in general lead to a transfer of funds from education — which is generally for the young to health care, — which is generally for the old. Higher education as a whole is having to reconsider accepted attitudes. In short the climate is ripe for change. There are therefore two keys to developing an adequate model for the funding of electronic media. Firstly there is, I think, no satisfactory alternative to opening up and prosecuting debate within one's organisation on the need for an information policy which is almost certainly going to cover a wider area than the library and that over a much larger set of institutional costs. But once information is seen as some-

thing of value which is not always and necessarily stored in printed form in the library, it becomes possible to look at managing its costs. Once this is seen as not purely a library issue, the second key is to ensure that all resources are managed and brought to bear on problems and issues. This need not imply that they are managed by a single budget-holder, but most librarians would, I imagine, aspire to this. Resource management rarely forms part of library school training any more than photocopier repair (that other major concern) does, but of the two it will be resource management that allows new electronic media and services to take their proper place in the range of services which all libraries should offer.

Resource management rarely forms part of library school training any more than photocopier repair (that other major concern) does, but of the two it will be resource management that allows new electronic media and services to take their proper place in the range of services which all libraries should offer.

My third theme is resource sharing at the European level. I am not sure how many of you know that it is now possible to access every American and British university library catalogue. One of the seven new

wonders of the world has appeared in IXI (International X.25 Interconnect). There is a guide to UK Library catalogues available over IXI⁸. I am also aware of one catalogue in Greece, one in Spain and one in Austria. Why are there not more? The cost of connection ranges from negligible to free. Then there is the PICA/SUNIST/LASER project, Project ION, looking at standards for document delivery in an electronic environment. Although this has some way to go, it opens up interesting prospects for resource sharing. It has always been shown that resource sharing costs rather than saves money. It may be that these kinds of developments will show a different truth. For example, my library has a major collection of modern Greek material. It is very expensive to maintain and support in terms of professional staff help. If I can now log on to catalogues in Greece and acquire records freely, perhaps I can save money. Similarly, if I have access to all the catalogues of all the great libraries of Europe, perhaps I can modify my acquisitions policy in some areas, confident that I can find and acquire material quickly through document delivery. Let me look only two years ahead. Work has begun in the UK on Super JANET a very fast network and discussion has begun on extending it into Europe, to create what is already known as the information super-highway. I can now see real possibilities of delivering docu-

ments electronically and very quickly. One might have to wait as long as ten minutes for an inter-library loan.

To return to my original theme, the cost of library operations can be significantly reduced by this technology, perhaps most of all in cataloguing, and resource switched to other areas.

The notion of the wandering scholar is still alive in Europe. Every summer troops of academics head for Rome, Paris and Berlin. Their first stop is the library catalogue. Just think of the impact if they could do the initial catalogue research before leaving home. And yet it would cost us almost nothing to make these catalogues available over IXI.

Alternatively, if you believe new resource is essential, it seems to me that there is a simple trick to persuade academics of the value of giving more funds to the Library. The notion of the wandering scholar is still alive in Europe. Every summer troops of academics head for Rome, Paris and Berlin. Their first stop is the library catalogue. Just think of the impact if they could do the initial catalogue research before leaving home. And yet it would cost us almost nothing to make these catalogues available over IXI. I firmly believe that if we can actually dem-

onstrate that the technology exists, we will find others receptive to giving us greater financial support. Let me now turn briefly then to my final theme, the democratisation of information. One of the facts that we are all too likely to forget when looking at new technology is that it is available to everyone and not just libraries. I do believe that we are in the midst of a fundamental change, which is best described by a neat analogy which I have taken from an American source, comparing our position to that of the change from the Ptolemaic to the Copernican world. In the Ptolemaic world the Library is at the centre of the universe, with readers, publishers, and library concerns circling round. In the Copernican world, the user is at the centre of the universe and the library becomes only one of the information sources, or planets, available to the user.

A survey was recently conducted in the UK which showed that one third of CD players were in academic departments. It becomes possible, increasingly for end-users to access information directly, bypassing the library. As great library collections are put on CD or optical disk they become available to all, irrespective of distance. I mentioned the ISI service recently set up in the UK. Almost one million people now have access from their office to this database. We are told that there are more CD-players in Italy than in the rest of Europe.

End-users possess many of these. It is impossible to meet a French colleague without being given a Minitel number, and Minitel alone surely makes my point about the democratisation of information. This trend to giving end-users power will continue, and they will find the resources to support it.

While we continue to erect administrative barriers in libraries we will continue to force people to seek the easier option which technology allows.

The user will in my view undoubtedly pay for this sort of convenience. While we continue to erect administrative barriers in libraries we will continue to force people to seek the easier option which technology allows.

It is not a solution to argue over whether the next CD should be a charge on the bookfund or the equipment fund. H. L. Mencken said that for every human problem there is a solution that is neat, plausible and wrong. So we should not try to solve our problem by the plausible avenue, by raising charges from new services and by creative accounting; we need to look at educational ideas, at the philosophical base. There will always be good and bad institutions, but what we lack at the moment is the intellectual infrastructure to carry the good institutions forward.

Teaching and research is being reshaped around us and we have to think through why libraries exist — and the answer will not necessarily be the same in the University of Cambridge as in the Massachusetts Institute of Technology and then we have to look at all the resources we possess to see how they can be deployed. At the same time we must take advantage of the capabilities of existing networks to show our academic colleagues how far we can make changes if properly resourced.

References

¹ Derek LAW — *Push, shove and the gift of the gab: the hidden techniques of equipment procurement*. London, CLSI Publications, 1989. (CLSI Annual Lectures on Library Automation. N.º 5).

² Ian R. WINSHIP — «The use of online information services in UK higher education libraries», *British Journal of Academic Librarianship*, 1986, p. 191-206.

³ Richard DE GENNARO — «Pay libraries and user charges», in *Libraries, Technology and the information marketplace*. Boston, G. K. Hall, 1987.

⁴ *Financing our public library science: four subjects for debate. A consultative paper (Cm 324)*. London, HMSO, 1988.

⁵ *Gateway to knowledge: the British Library Strategic Plan 1989-1994*. London, British Library Board, 1989.

⁶ Robert M. HAYES — *Libraries and Information Resources in Research Universities in the United States* [unpublished paper contributed to the British Library Research and Development Department Information UK 2000 project].

⁷ D. B. SHIELDS — Unpublished report submitted to the Committee of Vice Chancellors and Principals by SCONUL and IUCC (1990).

⁸ JANET-OPACS: *OPAC in the UK, a list of interactive library catalogues on JANET*, compiled for the JANET User Group for Libraries by the University of Sussex Library. Brighton, University of Sussex Library, 1991.