Jun 6th, 12:00 AM

Resource Sharing: The Pesent Situation and The Likely Effect of Electronic Technology

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RESOURCE SHARING: THE PRESENT SITUATION AND THE LIKELY EFFECT OF ELECTRONIC TECHNOLOGY

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Introduction

Resource sharing is a common - an increasingly common - theme in library literature; there is now even a journal with 'resource sharing' in the title[1]. There are two main reasons for this. Resources are more limited than they were, and it makes sense to see if they can be shared; and electronic technology offers, or appears to offer, a better chance of effectively sharing resources. The literature on resource sharing makes interesting if frustrating reading. Nearly all the writers regard resource sharing as morally desirable and economically imperative, and it is promulgated with great missionary fervour, to the point where any librarian who is not sharing his or her resources must be feeling very mean if not positively guilty. In preparation for this paper I read a great deal of this literature, and searched with little success for some positive results. Good intentions abound, and there are plenty of plans; some schemes appear to be in operation, but in such cases no costs are given or even predicted, the benefits (actual or expected) are rarely clearly specified, and there is little or no indication of performance. The time-scale is the future indefinite and the tense is the future optimistic. It is all rather reminiscent of the early literature on library automation. A thorough critical review of resource sharing literature would be a service to librarianship.

This paper is not concerned with the sharing of catalogue records through bibliographic networks, but with published materials. Even in this limited sense, 'resource sharing' is in fact not a very clear term. Resources can be stock or money; and resource sharing can mean the sharing of the existing stocks of libraries by better access and more active cooperation, or the cooperative use of acquisition funds to ensure better total provision than would be achieved if each library considered only its own needs. The first is usually called 'interlibrary lending' - in itself an inadequate term since in practice it includes the interlibrary provision of photocopies; and the second is cooperative acquisition, which to be effective needs to be combined with interlending. I will consider each of these kinds of resource sharing in turn. Before doing so, however, I must draw attention to another ambiguity in the term; for 'sharing' can imply not only easy access to one another's resources, but the provision of a common, central resource which is shared by all. Interlibrary access need not in fact involve cooperation. A central resource affects radically both acquisition and supply.

Cooperative Access

Interlibrary lending has been practised for many years, but has become a major activity only in the last three decades -

not merely as an essential supplement to local library provision but as a fundamental element in a nation's library system, especially vital to research. In the UK and a few other countries, interlibrary requests are running at 50-60 per 1000 population each year; levels lower than this mean not so much that local libraries are more adequate as that the interlibrary supply system is poor. Unfortunately, the systems of many if not most countries appear to be not only ineffective[2] - that is, they do not work very well - but also inefficient - they represent poor value for the money and effort that go into them.

The deficiencies of traditional interlibrary lending, involving access by libraries to one another's resources by means of union lists, have been clearly exposed with the increasing inability of libraries to meet a growing demand from their own resources. The reasons for this inability are well known: a great increase in research that has led to a fast growth up to the late 1970s both in published literature and of users, rapid strides in bibliographic control, and an economic crisis that has hit libraries earlier than it has hit publishing.

The weaknesses of cooperative interlending fall into three main categories. (A fourth weakness, delay in transmission of documents, is common to both cooperative and centralized systems). The first, that it does nothing to extend total national provision unless accompanied by cooperative acquisition, is considered later. The second is procedural: the operations involved in the procedures of requesting - checking requests for accuracy, transmitting requests, replying in cases of delay or non-supply, and switching requests between possible suppliers - and in the procedures of constructing, maintaining and accessing union lists. At present, these are staff-intensive, time-consuming and costly, and cause delays and failures, particularly in the case of recent publications that are not yet entered in union lists. Procedural weaknesses also make systems difficult to use. The third category is intrinsic: cooperative interlending requires effort, staff and eventually money on the part of both requesting and supplying libraries.

Local libraries have to give priority to their own users over remote users of another library. This may not matter greatly if they have to handle only a few interlibrary requests, but inevitably demand is not spread evenly among libraries, but falls mainly on a limited number of larger and specialized libraries. Beyond a certain amount they simply cannot deal with the demand, and have recourse to limiting requests, whether by imposing high charges or by giving, deliberately or perforce, a poor service. The net results of these weaknesses are high failure rates, poor supply times - which lead to low confidence and low demand - and also high costs. No amount of talking positively about cooperation, writing articles on resource sharing, and attempts to improve matters by traditional means will do much to change the situation.

There is one significant exception to these general criticisms. Local interlending systems - by 'local' I mean

conurbations, not regions - can, if well organized, with a good interlibrary transport scheme, achieve fast supply at low cost. It may not even be necessary to have union lists - it may be simpler and cheaper to ring up local libraries in cases of urgency than to construct, maintain and consult union lists. The more good libraries a conurbation has, the better the system is likely to be. However, even the biggest conurbation will leave many demands unmet, and beyond a radius of 10 or 15 kilometres local interlending ceases to be local and loses all its advantages.

Cooperative Acquisition*

Resource sharing in the more 'profound' sense of cooperative acquisition should, if successful, help to remedy the first weakness of cooperative systems, namely the fact that many wanted items may not have been acquired by any library. This depends on the willingness and ability of libraries to spend some of their funds on material that is not of importance for their own users on the grounds that users of some other library may want it some time. There is an obvious paradox here: resource sharing becomes more desirable as local acquisition funds become tighter, but it also becomes less practicable. When a library is already having to cancel some serials that are used, however infrequently, by its own users, it can hardly cancel some more in order to buy serials that are not used at all. Most large libraries are in fact still acquiring some serials that are no longer needed locally, but the number of these is growing smaller, and the scope for switching money to serials that have never been needed locally is slight. Even in more affluent times cooperative acquisition schemes on any scale did not last very long.

The possibility remains of what might be called negative cooperative acquisition - cooperative decisions as to which less-used serials each partner should cancel so as to ensure that at least one set of each is maintained. This is more practicable, at least unless and until cuts are so severe that few less-used serials are left; cooperation in the acquisition of medium-use serials is much harder.

With both 'positive' and 'negative' cooperative acquisition, some system is needed to enable decisions to be made. Union lists can identify unique holdings that should not be cancelled and also indicate existing holdings that may not need to be replicated in another library which might otherwise acquire the serials in question. Some system of efficient communication between the libraries is also necessary. In the case of monographs, the sheer logistics of cooperation are very daunting, and the effort may not be justified; for serials, with which this conference is concerned, the difficulties are much less.

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* National acquisition and retention policies and programmes have been fully explored in two studies carried out as part of the UAP programme [3,4].

It may be argued that while libraries cannot spare their funds for cooperative acquisition, some extra funds may be made available from the government, as indeed happens in one or two countries. This can be a reasonable option when there is already a strong system of large libraries with subject specializations and when there is little or no chance of putting any extra resources into a central facility that is available to all; otherwise the latter alternative would seem to be far simpler and more economic.

I have no doubt that most librarians can point to instances where resources are shared among a number of libraries. As with interlending, there is scope for local cooperation within a conurbation, though even this is limited. There are other examples, chiefly in specialized subject areas, but these areas are usually small and on the fringe of use; they have virtually no impact on the generality of users or the bulk of demands, and do little or nothing to solve the problems of access to documents. The truth is that libraries have failed to achieve much in the way of resource sharing, and that this is due not to lack of goodwill (though it is unfortunately true that goodwill is expressed more in words than in deeds) but to more fundamental factors. If this is so, it is a waste of time and effort to pursue resource sharing along existing lines, except perhaps that it may be desirable to prove to one's political masters that cooperation with other libraries in acquisition will not and cannot compensate for inadequate local resources[5].

Cooperative storage of less used materials stands up to examination no better than cooperative acquisition; the problems of organization, allocation, buildings, staffing, and supply are formidable, and the costs of any cooperative system are likely to be formidable too.

Shared Central Resources

Resource sharing in the sense of a central resource that is available to all is a different matter. The advantages of a central lending stock are familiar: it can extend total provision, it can monitor demand and so ensure that provision matches need, it is simple to use and avoids most of the procedures necessary in cooperative systems, and there is no conflict between local and remote users. A well organized and well funded central library should be able to achieve much higher satisfaction rates and much faster speeds than cooperative systems. The big question (apart from political factors such as exist in federal states, for example) is whether such a central facility is in fact well funded, and whether indeed large government funds can be justified to create and maintain a comprehensive central facility. The answer is that they can if the volume of demand is large enough to result in low unit costs; at least 1,500,000 requests a year need to be received to make a system based on a comprehensive central stock more economic than a cooperative one, though it might be decided to operate with fewer requests than this on the grounds that the better service is worth paying for.

A central resource can also serve as a national repository for material withdrawn from other libraries. It is simple to send all such material to one centre, which will keep at least one copy of all items, and supply them subsequently on demand.

Effects of Electronic Technology on Procedures

The situation up to the introduction of electronic technology was then that resource sharing based on cooperation was ineffective and inefficient, but that a central shared resource can offer a service that can satisfy the great majority of needs with adequate speed. How can the use of technology change this situation?

The procedures involved in cooperative interlending can certainly be improved by the use of automation, and improvement has already taken place. Library accessions recorded on the computer, and indeed whole library catalogues if they have been converted to machine-readable form, can be added to a central file, either on-line or by sending tapes that can be merged. Reporting to the central file can take place almost as soon as items are catalogued. Items that are lost or withdrawn can just as easily and quickly be removed from the file. The operations of bibliographic checking and locating can be merged. Union lists should therefore benefit greatly from the appropriate application of technology[6,7].

One question that needs to be resolved is whether data-bases constructed primarily for the purpose of shared cataloguing should serve also as union lists for location purposes - or for that matter vice versa. The requirements are different: unique locations are of special value to union list files, but are of no use for shared cataloguing; optimal interlibrary access requires the minimum of libraries that between them contain the largest number of separate items, whereas a shared cataloguing data-base will contain more libraries; and union lists can make do very satisfactorily with very short records, whereas most libraries want (or claim they want) fuller records for their catalogues. The advantages offered to interlibrary access by automation could be eroded by the inclusion of a location function in a much larger and more complex data-base, and it may be that the different functions and requirements are better met in most countries by separate files, though links between them may be desirable.

A central file can be accessed direct on-line, although it may be easier and more economical for user libraries if regular COM printouts are produced and used for the majority of requests, especially in the case of serials where the file is probably not excessively large. (In principle, union lists need not be constructed at all: requests could be input and checked sequentially on-line against the catalogues of other libraries until locations were found, but this would almost certainly be grossly uneconomic). With on-line requesting, requests can be checked automatically against an on-line circulation file where one exists, replies can be given speedily in the case of non-supply or delay, they can be switched immediately to other locations, and they can be put direct on to waiting lists if this is necessary. Most of

these facilities exist with the OCLC ILL subsystem[8], which is incidentally an excellent example of unplanned resource sharing, in the sense that the resources to be shared were not planned in advance.

References retrieved from data-bases such as Chemical Abstracts can be put direct into an interlibrary request file and should therefore be accurate, though in practice this facility has proved less valuable than it might appear because most references have first to be checked against local catalogues to see whether the items are available in the user's own library. The use of technology should also aid the mechanics of cooperative acquisition, whether positive or negative, by making it easier to find out what other libraries already have in stock or on order. Technology can thus be used to increase the number of different titles of serials (and other materials) available in a country, but it cannot increase the total financial resources available for acquisition; and most of the factors telling against cooperative acquisition are untouched by technology.

Delays in transmission are, in most developed countries, not usually serious. Studies have shown that a time of 7-10 days between requesting and supply is quite satisfactory in nearly all cases[9,10], and there are few developed countries with longer mail transmission times than this. This leaves a minority of requests for which greater urgency is required. Much more serious than the mail system as a cause of delays is the handling of requests in libraries, whether requesting or supplying libraries. It is odd that some libraries evidently give lower priority to requests for items they do not have in stock, especially since they are bound to be delayed anyway and their speedy despatch is therefore all the more important. It is less odd that libraries receiving requests do not handle them at once, for the reasons given earlier. Automation will speed the process up only if it happens to give libraries a greater sense of urgency or if it spreads requests more evenly among libraries and so relieves some of the pressure on larger libraries. The latter has in fact happened with the OCLC system, but the United States has an exceptionally large number of libraries; the probability of finding wanted items in medium-sized or even small libraries must be far greater than in any other country in the world except possibly the USSR, and it is doubtful if a redistribution of demand on anything like the same scale could occur elsewhere, or whether a similar performance could be achieved elsewhere without specifically planning an interlending system.

Although very rapid supply of documents may be rarely required, if the time taken in transmission can be reduced from 7 days to 0 the user obviously benefits, even if delays in requesting and supplying libraries mean that the total reduction is only from 14 days to 7 or 21 to 14. A great deal of interest has therefore been shown in the electronic transmission of documents.

Facsimile Transmission

Nearly all documents at present are on paper or in microform.

To be transmitted electronically they have to be converted into a suitable form, and facsimile transmission does that[11]. Telefacsimile has always promised more than it has achieved: yes, we are told repeatedly, the present machines are slow, unreliable and expensive, but just round the corner are the next generation, which will change all that. Gradually, quality has improved and transmission has become faster, but the disadvantages that remain are severe. It is still necessary to make single sheet copies from a volume or issue in order to feed them into the machine. The quality of illustrations is still poor. The time taken is still over a minute for an average page of a serial article. The cost is still high - it costs the British Library Lending Division about as much to supply one page by facsimile transmission as it does to supply an article of 10 pages by the normal processes. The process is staff-intensive, because of the double copying that is necessary, because contact has to be made with the receiving end, and because machines cannot be left when in use. Worst of all, perhaps, to reach a majority of those users that happen to have telefacsimile equipment it is necessary at present to have at least three different types of machine, because different makes are incompatible[12].

Doubtless further improvements will come about; compatibility will be achieved when Group 3 machines become universal, direct transmission from volumes or issues will be possible, and the speed of transmission will increase. It is nevertheless hard to see how telefacsimile can ever compete with photocopies sent by mail for quality and cost. If many libraries already find it hard to handle the burden of interlibrary requests they receive, telefacsimile will make it harder. Unless telefax machines are used fully their cost is hard to justify; while if they are used fully the staff required may not be available. Nevertheless it would seem sensible to restrict the use of telefacsimile to really urgent requests, but in such cases both requesting and supplying libraries must cut out all of their normal delays, or nothing will be gained. Unless telefacsimile is to be abused a realistic charge must be made for it.

What would be stupid is to try and compensate for the procedural deficiencies and staff shortages of libraries in handling requests by using telefacsimile extensively, since this will exacerbate the problems - like putting a thick layer of expensive icing on a rotten cake, which then collapses under its weight. If libraries had paid half as much attention to fundamental problems as to marginal ones, many countries would by now have much better document supply systems. A good centralized supply system without telefacsimile can achieve a much better average performance, at much lower cost, than a cooperative interlending system with telefacsimile.

Electronic Storage and Transmission

Facsimile transmission may be seen as a temporary stage on the way to the transmission of text in electronic form, and it is this that has caused the greatest excitement in the last few years[13,14]. Excitement is often accompanied by excessive

expectations and confused thinking, and this is certainly true of so-called 'electronic publishing'. Electronic publishing in its fullest sense, without the need for text ever to touch paper, can cut out libraries altogether. More likely is the electronic transmission of text that is printed out at the receiving end. An interim stage could be the printing out of texts from electronic stores at a centre or centres, which then send the printed versions to users much as photocopies are sent now; this saves no time in transmission, but may save time and money in the supply centres and may possibly be simpler for libraries to use.

All of these alternatives require that texts are in electronic form, whether they are created in this form or turned into it by the electronic capture of printed text. Even when texts are created in electronic form it seems likely that for some time to come there will also be a printed version. Where conventionally published texts exist they can be handled in the same way as they are at present, in effect ignoring the electronic version. Libraries can therefore if they wish for the foreseeable future pay little attention to electronic texts except in those few cases where there may be no printed version.

However, to do so would be to lose the advantages offered by electronic transmission: no transmission delays except those caused by faulty telecommunications; high quality transmission, including prints as good as an ordinary printed text, and better than xerographic copies, if the receiving and printing equipment is good enough; and possibly also the ability to establish quickly by an on-line scan whether the item in question is really wanted or not - something that users cannot normally find out at present until the document, wanted or not, is in their hands. It must be pointed out that the production at the receiving end of high quality prints does require expensive equipment - for example, a high speed laser or ink jet printer of graphic arts quality - and that such equipment will not be acquired by every library. It must also be said that there will almost certainly be several competing and incompatible systems in the next few years, so that the selection of the 'best' equipment may be a matter of chance - very few libraries will be able to acquire a whole range of equipment, and if they did most of it would soon become obsolete.

One main feature of electronic texts is that access to them can be obtained only on terms agreeable to the publishers. They may give certain rights to data-base operators or supply centres, but the freedom to lend and photocopy that libraries have at present will disappear. Since one of the objectives of serial publishers in moving towards electronic storage and transmission is to make it difficult or impossible for libraries to copy without permission or payment, we can be sure that stringent controls will be set on the use of electronic texts. If electronic media are sold to libraries, their cost will undoubtedly be very high, since publishers will be selling masters from which single and multiple copies can be made quickly and cheaply. If, as is more likely, documents have to be requested individually from electronic

stores held at licensed centres, each one will have to be paid for, and the price cannot be low if the system is to pay for its keep. The implications of individual article acquisition from electronic stores go beyond libraries to publishers and authors, and indeed to the relations between public and private sectors; these are explored further in my talk later in this conference. For the moment, it should be noted that the speed and quality of tranmission will have to be paid for, and the economic problems of libraries could be aggravated rather than alleviated. It may gradually become possible to reduce local acquisitions and rely more on fast access to electronic stores, but whether it will become economic is another matter.

Electronic transmission can readily transcend national boundaries, and this opens up the possibility of rapid access to a very wide range of materials - to the world's resources, in fact. This assumes that the world's resources are electronically stored and fully accessible at any time. How far countries would wish to be dependent on material stored in other countries is a tricky political, and perhaps economic, question. It is easier to envisage them depending on external resources for 'fringe' material than for the literature they need from day to day - which is much the same as the present situation.

Potentially, the effect of electronic technology on storage could be the most dramatic of all. Once converted to electronic form, the world's literature could be stored very compactly, in a number of locations, and in a form from which retrieval should be easy. This would solve the conservation problems of libraries as well as their storage problems. If the medium is considered vital to the matter, or important for aesthetic or other reasons, efforts will still be made to preserve and store the originals, but there are severe financial and practical limits to conservation of originals.

Fortunately libraries do not need to make major decisions now, and they could not even if they wanted to, because little material is in electronic form, and it would in any case be very unwise to acquire expensive equipment that may be useful for only a limited range of electronic publications and even then may be superseded in a short time. The future is very uncertain, but progress is likely to be slow, to judge from what has happened to date. Librarians do however need to keep themselves informed, and those with a major role in providing and supplying documents, like the British Library Lending Division, will wish to take a more active part in the hope of influencing the future rather than merely responding to it.

Conclusion

Electronic technology is not a magic formula that can produce an instant solution to the problems of ensuring the effective provision and supply of documents. It can certainly do a great deal to ease procedures and reduce some of the delays, and it may in due course lead to almost instant delivery of some documents, but its impact on some of the most severe problems, particularly those concerned with total national

provision and with the ability of libraries to handle demands on their resources, is likely to be very small. Electronic technology will not provide more resources, of money, of stock, or of staff. It would be foolish not to use technology where it can be useful - always looking at the costs as well as the benefits - but it would be even more foolish to devote excessive attention to costly applications that will bear little fruit or to lose sight of faults in systems that require quite different solutions. Otherwise we are in danger of trying to automate a pantomime horse: costs will increase, performance will not improve, audiences will decline, and the horse may be electrocuted.

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