CD Versus the Printed Word

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Paper presented at the CD-ROM Conference, York, 18th and 19th September 1989

Abstract

Do we have to assume that compact discs and the printed word are in competition with each other? If we do, the areas of conflict are those where resources are under most pressure - money, time, and space. Each of these aspects is considered; a comparison is made between the costs of the printed word and CD versions of databases, the demands of a CD service on library staff time are compared with the potential saving in time for users, and the relative storage capacities of paper products and compact discs is described. The CD-ROM Users Club introduced at the Medical and Dental Library at the University of Leeds as a means of controlling the use of the service is also described.

I have been asked to talk about CD *versus* the printed word. So, does this mean we have to assume that the two are in competition with each other? The demands that the two formats make upon those limited resources - money, time and space - are the areas where competition may occur. In an ideal world they would be complementary services and surely that is what we should aim to achieve.

Areas of Conflict.

1. Cost.

The first problem facing most librarians is that of cost. CD-ROM systems are not cheap and when we are faced with competing claims on our "book fund" certain value judgements have to be made.

Once the system is in place the cost of searches is minimal. There are no telecommunications costs, no connect-time charges and no royalty costs. The costs of the hardware needed to set up the system are fairly easy to assess and it may well be that some special source of funding is available for purchase of equipment. The cost of the databases themselves may turn out to be the stumbling block. These costs will vary according to the database(s)

in use but all are quite expensive. A number of compact discs are one-off Productions such as the *Oxford English Dictionary* (£505 + VAT) while others are available on a subscription basis, with updates of varying frequency from monthly to annual. The so-called "subscriptions" are frequently actually leasing arrangements, and if a library decides to cancel the subscription all the discs must be returned to the vendor when the contract is terminated.

While the capital costs may well come from a separate equipment budget the recurring costs may be regarded as a "subscription" which it will be difficult to meet from a periodicals budget that is already subject to a standstill or even cancellation of titles. If the situation already prevails where choices have to be made between different journal subscriptions, how much more complicated is the decision to buy a CD system at the expense of traditional library materials.

One possible solution to this conflict is to consider a straight one-for-one swap in the cases where there is a direct match between hard copy and the CD-ROM. I do not think that this is the solution - and that opinion is not based solely on financial considerations. Looking at the costs first; Ulrich's Plus, for example is currently priced at £325 p.a. (+ VAT) and could replace *Ulrich's International Periodicals Directory* at around £225 - hardly a saving.

An even wider gap exists in the case of CSA MEDLINE, issued by Cambridge Scientific Abstracts, which contains *Index medicus, Index to dental literature,* and *International nursing index* at a recurring cost of £2040 p.a. (+VAT) compared with about £575 for all the hard-copy versions included in the database.

Some producers, where the CD-ROM originates from the same publishers as the hard copy, are moving towards discounts for subscribers to the printed version. The extreme example is *Excerpta medica* where subscribers to the full set of current awareness journals (Dfl 46,508.00 discounted by

34% to Dfl 34,127.00 for a full set subscription are offered 100% discount on the CD-ROM set with a sliding scale for purchasers of less than the full set. The CD-ROM version is only available to those subscribing to parts of the hard-copy version worth at least Dfl 20,000.

PsycLIT (£2545 p.a.+ VAT) covering psychology and behavioural sciences is produced by the American Psychological Association with a 10% discount for subscribers to *Psychological abstracts in print* (£666).

Even discounting the financial aspects, replacement of hard copy by the CD-ROM version of any publication has another severe limitation. Access to the information is restricted by the amount of equipment available. While several volumes of ah indexing publication can be searched simultaneously by several people, most libraries (at present anyway) have only one microcomputer and its associated CD player available for searching. Networking is expressly forbidden by the vendors at the moment, though it seems likely that it will be an accepted arrangement in the future - still requiring expenditure on hardware and, doubtless, a fee for the privilege of networking the data.

On grounds of cost, therefore, it is difficult not to conclude that CD's and the printed word must compete for funds. Their functions are not interchangeable and, without expenditure on hardware and an investment in learning by users as well as staff CD's could not replace the printed versions.

2. Time.

The next commodity that is in short supply for most of us is time. Do not underestimate the amount of time that a CD-ROM service is capable of absorbing.

There are a number of reasons why the service is so time consuming. Firstly, although many readers would consider themselves to he "computer literate", CD-ROM technology is new to most of them. Secondly, the concept of computerised literature searching is even more unfamiliar to them. There are still many users who are not confident in dealing with computer equipment and who require frequent assistance even now. There are effectively two separate sets of skills to be acquired before the CD-ROM system becomes really useful to a new user: (i) the ability to handle the computer equipment, and (ii) the ability to compile an effective search strategy (using Boolean

operators and all the refinements available to searchers).

The database with which I am most familiar is MEDLINE, and the complex indexing structure of the database, which is its strength in the hands of an expert, is also where readers need help if they are to make best use of the information available to them.

Most libraries have acknowledged that some sort of teaching is necessary and even so it has been found that trained users still require supervision when using the CD-ROM service [1].

This may seem to imply that the printed versions of the indexing tools do not require any special knowledge. This is not the case - we have tried for many years, and with only limited success, to teach users how to get the best out of *Index medicus* through an understanding of the indexing process. The intervention of computerisation lends a certain appearance of authority to the results which makes it even more important to ensure that those results have been achieved correctly. When they search a printed index, users are probably conscious that what they retrieve may be only part of the answer and expect to browse to a greater or lesser degree, making the final selection for themselves. Display those results on a computer screen, however, and they become much more compelling, taking on an authority that they *may* not deserve.

It is not only the library staff who are short of time. In our case (in a medical library) many of our customers are busy doctors who find it extremely difficult to take time to learn how to use a new information tool. Arrangements for courses often have to be changed at short notice, delayed or curtailed while doctors respond to the summons of their "bleep". Library staff arranging training sessions are therefore subject to all these time constraints and have to be very flexible. For this reason, the total time used by library staff to provide training is often much greater than anticipated. Since that time willl have to be covered by other staff, it is important that the end result repays the time spent by reducing later requests for assistance.

Once it is mastered, the CD-ROM system should save time for users. They can achieve results quickly and print them out (instead of having to copy out references by hand) with the added bonus that they will be complete and accurate when they come to retrieve the original paper. Alternatively, they can download them to a floppy disc that can be taken away and used on another microcomputer in

the laboratory or the office to create a personal database or bibliography.

Time spent searching a database on CD-ROM does not cost money in the way that it does with an online system (where the costs of telecommunications and connect-time are a constant constraint). This is, however, a mixed blessing for two reasons. The serendipity of users sitting at a terminal with a large database at their fingertips may cause them happily to spend a lot of time on flights of fancy. Also (as has been shown elsewhere [2]) users tend to search CD-ROM in the same way that they search the hard copy - they retrieve references using a single term; then scan the results one by one (as they would search under a single subject heading in a printed index).

In practice, however, most libraries find they have to ration the amount of time allowed per session because they only have limited equipment. Consequently even the most enthusiastic of users cannot spend hour after hour at the keyboard. The booking system that many libraries have had to introduce has turned out to be an advantage because a user can plan his time in the knowledge that the equipment will be available when he arrives.

We carried out a survey at Leeds of a limited number of users after only about six months of operation. All the users questioned said that using **MEDLINE** on CD-ROM saved their time, with some remarkable figures quoted when they were asked to quantify this saving - between 4 and 8 hours a month in total for typical users. The point was also made that the same amount of library time was used more effectively.

3. Space.

In the case of the third of the limiting factors, space, it could be argued that here at last CD-ROM scores unequivocally over the printed word. At present a compact disc can hold data equivalent to about 275,000 A4 pages - a very considerable saving of space. The hardware required to consult those pages, and to print out the results of the search, does however occupy library space. The amount of space will depend upon how the library chooses to handle the service. Many libraries place the CD-ROM equipment close to their Equiry Desk so that the Readers Adviser can help users with search problems. The library may, however, decide to house the equipment in a separate room to overcome the problems of noisy printers, lack of privacy for searchers or some other reason.

Not very long ago (June/July 1988) [3,4] concern was being expressed about the archival function of compact discs. The durability of CDs was called into question when it was found that the aluminium on three-to four-year-old discs was oxidising with a resulting corruption of data. Despite reassurances from manufacturers this question does not yet seem to have been wholly resolved (at least prior to the start of this conference!). Depending upon the type of library, it may therefore be sensible to have some data at least duplicated in conventional form (as a back-up) for long-term storage. This of course would cancel out some of the space-saving feature of compact discs.

Under the three broad headings - **cost, time,** and **space** - we have considered CD-ROM *versus* the Printed word. I would now like to explain how we have come to terms with some of these conflicting claims in the Medical and Dental Library of the "University of Leeds.

We were faced with the problem of financing a new service at a time when funds were hard pressed by the demands of ever-increasing periodicals subscription bills. Also, we were determined to make potential users aware of the basic techniques of computerised literature retrieval and, in particular, the Medical Subject Headings or *MeSH* indexing used in the MEDLINE database. We decided that the best way of proceeding was to launch a Users Club.

CD-ROM Users Club.

Members were recruited by advertising in the library, through letters to heads of departments, and by direct mailing to anyone who had used the on-line search service during the previous year.

The cost of one year's membership is £50 for which members receive a training session in search techniques which take advantage of the subject indexing used in MEDLINE and in the workings of the CD-ROM system itself. The instruction takes about 1 1/2 hours in all. Members also receive a user's manual and unlimited access, through a booking system, to the database itself. They receive regular updating information when, for example, there is a change in the software or when a new disc is received.

The take-up has been excellent. In the first year we had 52 members. Of those, 38 were funded by their departments or from research grants, and 14 paid the fees from their own pockets. We allowed a departmental membership at £75 which allowed one nominated representative to search on behalf of other members of his research team or department.

Two local hospital librarians joined at £75 each, thus obtaining a very cheap search facility for their users! The Club has now been in operation for 20 months and there are 85 members.

The response to the scheme was much better than we had expected at the outset and, consequently, we now have a healthy cash reserve. The second year of operation seemed likely to be the testing time but, in fact, 75% of members have so far renewed their membership. Since the financial position was so good we decided to reduce the cost of a renewed subscription to £25 although the indications were that they would have been prepared to pay the same fee again. New members joining still pay £50 for the first year of membership.

Because of the favourable cash position it has been possible not just to cover the costs of the compact discs and consumables, but also to meet the expenses of attending meetings (such as User Group meetings of direct relevance to the service).

By introducing this Users Club we have solved some of our problems - but created others. We have more than covered our costs (there was never any attempt to recoup the capital costs of setting up the service) and, since we have always operated on-line literature searching on a cost-recovery basis, the idea of paying for information has been accepted by most users. Almost more importantly, by introducing the charge we have been able to ensure the attendance of new members at the training sessions, which is a prerequisite for admission to the Club. We felt that it was important to teach them at least the rudiments of searching at the start, as well as handling of the equipment and the software.

Our concern that users may assume more from their results than can be justified by their ability to search the database effectively is a very real one. Some libraries have a warning notice attached to their equipment suggesting that if the search results are to be used for anything really important they should take advice from a member of the library staff. A recent editorial comment in *Medical Reference Services Quarterly* [5] expressed concern about the "satisfied and inept end user" - who is manipulating the system badly but is still satisfied. Such users are difficult to identify for the very reason that they are satisfied. Those who are dissatisfied, either through their inability to operate the system well, or who have unrealistic expectations, will identify themselves to the library staff. Those who are doing effective searches and

are satisfied with their results will not be so easy to identify but they need be no concern of ours anyway. It is to try to eliminate the inefficient but satisfied user that we ensure that all users have been given some grounding in search techniques.

The training for User Club members is provided by two members of library staff to small groups on a seminar basis rather than one-to-one, the aim being to reduce the amount of time spent on this activity by library staff. Once "trained", users should be able to cope independently and need little further help from library staff.

We do allow casual users to have access to the system if it is not in use by a club member, but they are only allowed to use the current year's disc and are given minimal "start-up" assistance by library staff. This minimises the demands upon staff time and retains a fair deal for the paying customers.

The decision to require payment for use of the service might be seen as unfair to undergraduates who in many cases would not be able to pay. It was therefore proposed by the library that selected groups of students should be introduced to the system without payment. Astonishingly, the library committee decreed that medical students had too much work and instruction could not be fitted into the timetable. Also the view was expressed that it was more important that they should learn to use "conventional" methods of finding information, and, since must of them would have access to only limited information resources after qualifying, their expectations should not be increased unnecessarily. Eventually it was agreed that a small group of students - known as "intercalating" students because they are taking a year out of the medical course to obtain an honours degree in one subject such as biochemistry or microbiology - should be targetted for special treatment. These students are seen as high-fliers - more likely than their colleagues to spend some time in academic medicine and therefore to have access to such things as CD-ROM.

The twenty or so intercalating students were given instruction and were allowed free access to the system, only conceding priority to Club members, throughout the academic year 1988-89. Library staff found them a very rewarding group to teach. They were highly motivated, quick to learn, and made excellent use of the opportunity. Unfortunately, since the courses they were taking overlapped with those of other (non-intercalating) honours students, the latter complained because they felt the intercalating students were enjoying an

unfair advantage. Much discussion ensued but it was finally decided that the scheme should continue for at least a further year. It is not appropriate here to comment on the decision to exclude other undergraduates.

The idea of the Users Club was not universally welcomed as it was regarded, in some quarters, as the thin end of a wedge leading to general payment for libary services. The Library Committee, however, supported the scheme. It was accepted that access to this type of information was bound to be limited for the reasons already discussed and that spending library money on the system at the expense of conventional materials could not be justified. They were also concerned about the potentially large demands upon staff time for instruction if the scheme were extended to all library users. They therefore agreed to the Present restricted arrangements.

That is how we at Leeds have handled the management of this new information source in our library. Elsewhere, practice varies widely: many libraries have made the system freely available, while others retain it for staff use only. We are somewhere in between.

Conclusions.

So, is CD-ROM *better* than the printed word? For certain applications it certainly is. Searching a bibliographic database such as MEDLINE has the advantage of allowing the combining of concepts using Boolean operators to refine the search and retrieve only the specific papers required. Free text searching is possible and this cannot be done in a printed index except, to some extent, where a permuted index exists. In the case of MEDLINE the

presence of abstracts, which are not available in the hard-copy version, is considered by our users to be a major advantage. Because the material is held in machine-readable form on CD-ROM the user can print out references as he finds them, or download them to a floppy disc. Either of these activities would entail a time-consuming transposing operation with data taken from the printed versions. The limitations we have already enumerated - expense, limited access, etc. The printed versions of the databases also have advantages. They can be searched by untrained users, they are durable and transportable and they do not require special equipment to provide access. They are also cheaper in most cases at present. The two must be complementary services and not competing ones.

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Personalities at the CD-ROM Conference

Brian Cox; Thomas Slatner; Dr Donald Urquhart; John Urquhart

John Urquhart, Organiser, UKSG; David Brown, David Brown Associates; Heather Taylor, ISI;
Janet Mitchell, OCLC; Hazel Woodward, Chair, UKSG