

# CD Versus Online

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## Abstract

The paper will explore the impact of new technologies in order to determine whether CD ROM can be considered a replacement technology for online retrieval or whether it merely offers libraries and their users an alternative means of accessing information.

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My first problem in writing this paper was trying to come to grips with its title and I have to say, Mr. Chairman, I'm not too keen on it since I don't necessarily see the issue as a clear cut either/or but more a question of horses for courses and I hope that by the end of this session to provide some arguments to support this view.

We've heard a lot about CD-ROM in the last day and indeed months since it has become a "hot topic". One cynic suggested to me recently that CD could not yet be thought of as an accepted technology since it was still necessary to hold conferences on it!

It is however relevant to consider the impact of a new technology. I would argue that new technologies first make an impact by replacing older technologies but that as their adoption increases new functions (rather than replacement functions) makes the impact of the new greater than the capacity of the old. Lets look at transport as an example - horse, train, car, plane - the greatest impact of the adoption of these is not simply the ability to travel faster but the changes resulting from a mobile society. Similarly changes in the way information is stored - book, microform, online, CD-ROM are not in the end important from the point of view of how much information can physically be stored in the medium but how the user can access and manipulate the data it contains.

Let's first however consider CD-ROM as a replacement technology. In the older technologies the only functions are storage and retrieval. In the case of books and microform they can do nothing

but surrender information because the "container" is passive.

It is true that the power of the host computer in online systems can be used to perform functions other than retrieval and in some cases it can and does. OCLC is a good case in point because the user can not only retrieve bibliographic data but can also edit and create bibliographic records and use it to perform ILL and other types of transactions. However cost of telecommunications is a very real factor to using the host computer in this way and in general, online information retrieval databases offer few functions beyond retrieval.

The power of the microcomputer is crucial to the manipulation of data both in the online and CD-ROM environments. When accessing online systems using a "dumb" terminal there is very little ability to do anything other than interrogate the database and view results or direct them to be despatched through an offline process. Once however the "local" power of the terminal is increased then the users ability to manipulate the data also increases. OCLC terminals in the last few years are a useful indicator. In 1974 we introduced the 1xx range of terminals which could only be used to access OCLC. The next major advance came in 1984 with the introduction of the OCLC M300 - a customised IBM PC with 256K RAM and two disc drives. Effective applications such as the OCLC terminal software and Micro Enhancer packages which allowed libraries local processing and unattended operation were written within these limits. Now, a software generation later, these limits are indeed limitations. 640K RAM and indeed a hard disk are considered basic requirements and our current workstations the OCLC M310 and OCLC M330 have the capacity to undertake full screen editing of bibliographic records, export of MARC records, windowing to view two records simultaneously and to perform functions such as serials control, acquisitions and interface with local systems with only occasional access to the central OCLC system.

In those same years the speed and quality of the telecommunications links to online systems has also greatly improved. Networks such as the OCLC network have adopted the international OSI standards and the interconnection between private networks and the public data networks, certainly in most European countries and between Europe and the US is both available and of acceptable quality. Fibre optic cables and satellites are also used. The OCLC Europe network is now a backbone (as opposed to a star) network running at 9,600 bits per second with interconnection to the USA achieved via the TAT 8 fibre optic cable which runs at 56,000 bits per second. Most local links now operate at 2400 or 1200 bits per second which is a world of difference to the old 300 baud acoustic coupler teletype connection which no doubt many of us can remember.

It is however the cost of online communications which have been the major limiting factor to their increasing use particularly in libraries in the public sector with capped or declining budgets. A dedicated transatlantic link costs more than £70,000 per annum and national public data network links average at about £3 per hour for a "national" call and £5 per hour for an inter-European call although there are wide variations throughout Europe due to national pricing tariffs. Database connect charges are also high - No wonder librarians carefully prepare online searches and are reluctant to allow end users direct access!

This brings us to another factor - the interface to online systems. These are normally designed for "experienced" searchers. In most cases this restricts their effective use to information professionals and these librarians have been reluctant to "share" this expertise, quite rightly perhaps, and retain it as their professional skill.

In the past, search interfaces have also been peculiar to each host, so that knowledge of a range of search languages has been necessary to trawl the increasing number of databases available. The introduction of the proposed NISO Common Command Language for Interactive Information Retrieval (239.58-198x) should however alleviate this problem as it is adopted. However, it is still a "command" level interface which many end users would find difficult to learn quickly, being used as they are to the menu and mouse interfaces commonly used in microcomputing.

CD-ROM frees the user from online connection costs. Although CD-ROM products cannot yet be thought of as inexpensive most are priced in the

range of 25-30 hours of equivalent online time. In libraries and other environments of moderate to high use the cost of the equipment and disc can soon be recovered. In addition it is more easily budgeted for - the fixed cost of the technology being seen as more manageable than the "pay as you go" pricing typical of most online services.

CD-ROM does, however, require the library to invest in the appropriate hardware - micros and CD-ROM drives and as with all new technologies the rate of take up is exponential. Every year OCLC undertakes a mail and telephone survey to track microcomputer and CD-ROM product ownership over time. The results of the 1988 study which surveyed 300 OCLC members and 148 non members indicated that amongst OCLC members CD drive ownership has grown from 6% in 1986, 28% in 1987 to 44% in 1988. For non OCLC members ownership of CD drives only grew from 3% in 1986 to 11% in 1988.

Perhaps, more significantly, 43% of OCLC members who owned a CD product planned to purchase an additional product in the next 12 months and more than half (52%) of these indicated that they would buy both a new CD drive and new microcomputer to use with the new product.

It is not easy - or wise to try and make comparisons between the US and Europe since there are a number of factors which must be taken into account.

1. The European market is smaller and more difficult given the wide variations between individual countries.
2. European telecommunications costs are generally higher and less reliable than the US.
3. European libraries are not as affluent as their US counterparts.
4. PC penetration and computer literacy skills are lower in European libraries.
5. CD drives are more expensive in Europe.

However, whilst acknowledging differences in the markets there is no substantial reason to suppose that European libraries will not adopt CD technology and in fact many reasons why there might not be far greater incentives for them to do so.

So equipped with the hardware and relieved of the taxi meter syndrome the user can relax and ask "what more can this disc do?". The combination of high density local storage and the increasing power of the microcomputer provides capabilities which

the present generation of products have probably not yet fully exploited.

Firstly, the overall feeling of using a CD-ROM product is different. Graphics and colour play an increasing role in "packaging" the product and making the information more attractive in its presentation. Secondly the search capabilities may have both menu and command interfaces sometimes with the capability of a range of languages so that users can work in English, French, German or Spanish at the press of a function key and this capability is extended to the availability of context sensitive help functions. Thirdly the format of the retrieved records - in a direct copy of online retrieval systems functions - may be quickly changed at the press of a function key. Other functions such as the availability of browsable indexes, windowing, and in some cases word processing functions make the product user friendly - and by user we can say end user or researcher. It is therefore the combination of the micro software with the storage medium which makes CD-ROM an opportunity technology and certainly makes it a replacement technology for microform but not necessarily, I would suggest, for online.

For CD-ROM does have limitations. Whilst the capacity is, at first, mind-blowing 300 books, 200,000 pages or 600,000 MARC records there is as with any physical carrier a limit. Take, for example, the OCLC database. It currently contains more than 20 million MARC records - 30 or so CDs. CD-ROM jukeboxes exist but are not common. Using a single CD drive or even a 4 CD drive would make searching a database on 30 CDs impracticable. For large databases, we are therefore talking about subsetting. In considering CD-ROM OCLC identified a range of possible subsets: for its database by format or date of publication; country of publication, by activity, (cataloguing, authority control etc.), by subject, by currency or by frequency of use. All these are possible. However the economics of production are such that the combination of size of potential market and frequency of updating are key factors which require database publishers to identify clear markets at which to direct their products, whilst at the same time not competing against their own online services.

OCLC's approach has been just that. The CD products we market are clearly targeted at increasing the use of our database without endangering its enrichment or growth.

Firstly we have packaged databases - combining subject subsets from the OCLC database with commercial databases in the same subject area. ERIC is offered with The Education Library (a subset of the OCLC database) and similarly Agricola with an Agriculture subset and NTIS and other scientific databases with OCLC subsets for Computers, Environment and Energy. These CD-ROM "libraries" are directed to reference use rather than technical processing librarians who are our established users.

For technical processing we have taken the most recent and most frequently used cataloguing records and distributed them on CD-ROM as a product offering cost benefits for small, general libraries for whom telecommunications costs are a very real disinclination to using our cataloguing service. This product also has high relevance to markets in some parts of Europe and the Asian/Pacific Region where time differences, availability and cost of online telecommunications are barriers to the adoption and use of the cataloguing system. In this way CD-ROM can be seen as a substitute for online use, and in fact our CD-ROM cataloguing product CAT CD450 includes an online link to the entire OCLC database or, where even this is not available, an offline mechanism for the adding of holdings information and original cataloguing to the online union catalogue. Subject subsets for cataloguing are also being introduced aimed at the department or special library. The first of these are the Medical Cataloguing Collection and the Law Cataloguing Collection. A Music Cataloguing Collection is also in preparation.

Currency of CD-ROM can also be a limiting factor. Online databases can be updated in real time or certainly at daily, weekly or even monthly cycles. The costs of mastering CD-ROMs is such as to make frequent updating uneconomic and therefore restricts their use to information where currency is not critical. Many services therefore offer a CD-ROM with an online capacity to "top up". Certainly financial information such as share values, mortgage rates or some medical information are not suitable candidates whereas directories, encyclopaedic and many bibliographic applications such as the British Library's GKIII project are much more suited to a CD-ROM application.

In fact this selection and choice of the most appropriate access to information is becoming a key librarianship skill. Information management rather than information storage. In times of cost recovery and cost control this is increasingly important. Take for example a single bibliographic record produced

by the British Library, the Deutsche Bibliothek or any of a number of national libraries. That record can be accessed or may be "available" in print, microform, online and CD-ROM and will continue to be so for a number of years to come. I'm not aware that the British Library, for example, has any intention of discontinuing the printed BNB or its online services because it has introduced a CD-ROM product. It's not the package but the use of the record which will determine the most appropriate means to access it - is it current cataloguing, a large retrospective conversion project, an inter-library loan, an acquisitions

enquiry or for general reference? Who will perform such enquiries, how frequently and how will the results need to be manipulated disseminated and distributed? - these are the key factors in the choice of the most appropriate storage medium.

CD-ROM adds to that choice without necessarily replacing any of the older alternatives. Its growth and adoption will most likely be quicker than the growth of online systems and its impact possibly also greater. We should however at the end of the day evaluate it in terms of its qualitative rather than its quantitative attributes.



Hazel Woodward introduces a session