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New Age Cooperation: The Effect of Technology on Library Cooperation

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Abstract

Novel and aggressive attitudes toward cooperation will need to accompany the development of information technologies if libraries are to maintain a central role in the information environment. Existing cooperative mechanisms must be expanded by the establishment of international strategic alliances with publishers, database producers, software developers and hardware suppliers. In particular, Australian librarians need to re-assess their involvement in scholarly publishing and develop strategies which meet the challenges posed by emergent communication and storage technologies.

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New Age Cooperation:
The Effect of Technology on Library Cooperation

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SUMMARY: Novel and aggressive attitudes toward cooperation will need to accompany the development of information technologies if libraries are to maintain a central role in the information environment. Existing cooperative mechanisms must be expanded by the establishment of international strategic alliances with publishers, database producers, software developers and hardware suppliers. In particular, Australian librarians need to re-assess their involvement in scholarly publishing and develop strategies which meet the challenges posed by emergent communication and storage technologies.

Emerging technologies will radically affect the ways in which libraries cooperate. Not only will the range of activities increase, but there will be fundamental changes to the philosophy and arrangements governing interaction between libraries. In the cooperation stakes, librarians have been consistent winners but past achievements will count for little in a future more attuned to economic rationalism than altruism. Formal structures which have served so well in the past may be ill-equipped to cope in an environment in which computer and communication technologies are basic to everyday activities and regarded as the means of addressing every information-association problem.

Complacency, inflexibility, and the inability to react appropriately and quickly are distinguishing characteristics of individuals and organizations which have difficulty coping with change. Although they are common foibles, libraries cannot afford to indulge in them. The pressure on libraries to meet the challenges involved with the use of information technologies will require extensive conceptual and organisational change. Innovations in communication and computing technologies not only occur rapidly, but often they are implemented without recourse to ordered planning processes. Simply keeping abreast of developments requires the commitment of a significant proportion of every organization's current resources. In such a fluid environment, some long-cherished beliefs and attitudes will be like dinosaurs struggling to escape the quicksand of evolution.

Like the Stegosaurus and Brontosaurus, there are forms of library cooperation which are prime candidates for extinction and attempting to maintain them will have no long-term benefits and may prove to be disadvantageous to librarians and libraries as well as to their clients. The high cost of library automation encouraged the establishment of cooperatives. Almost all have been successful as they enabled the pooling of resources and the attainment of economies of scale. Technological change has altered the cost relationships and software, not hardware, now constitutes the major expense. Greater use of vendor maintained software has almost eliminated the need for local programing and most hardware configurations can be operated with minimal interference. It is now economically, technically and organizationally feasible to have cooperative automation projects which use distributed, rather than central, facilities.

Centralized cooperatives, such as OCLC, have examined their objectives in relation to their operating environments and have implemented survival strategies which involve the provision of value-added services such as information databases, consortium-level purchasing and skills transfer. Not all cooperatives have, or will, survive. Many are established for a single objective and are extremely effective during the implementation period. Once the objective is achieved or becomes a routine function, the cooperative often loses its sense of cohesion and direction. These organizations are the Pterodactyls of the cooperative world. For a time, they soar but ultimately survive only as interesting fossils.

While cooperative activity across a broad spectrum of libraries may continue to be philosophically desirable, it may be impossible to sustain. In the higher education sector especially, institutions are increasingly in competition for students and resources. Australian Government initiatives may extend this competition to other sectors by involving technical education and local government libraries in the support of open learning programmes. Competitive advantage may necessitate new relationships which are outcome motivated, project based and controlled by commercial contracts. Different combinations will coalesce to achieve particular objectives and the cooperative partners may include library, research, computing and publishing interests.

Cooperation based on altruism and commonality of philosophy will continue, but many libraries will find participation harder. Many libraries may find paying for the services and products they require to be less expensive and more efficient than cooperative arrangements which require many costs to be absorbed by participants as part of operating overheads. Greater emphasis on immediate results, and increased client expectations for the supply of information on-demand, may make it more difficult to justify long-term investment in projects or activities for which future benefit is difficult to substantiate. In the future, participants will be required to undertake detailed costing of cooperative activities and indicate the means and rate of cost recovery or the attainment of predetermined objectives. More significantly, the achievement of these performance measures will determine support for future projects.

Potential benefit and ability to pay may well become the main determinants of future cooperation. In an environment characterized by competition, all inter-institutional activities will be assessed not just in relation to the benefits but also in terms of the competitive advantages which might accrue by excluding other participants. Most organizations will expect library services to operate within predetermined budget parameters and to do so in the most effective way possible. Cooperation will be permissible only if it results in tangible benefits relative to the resources involved. If the resources contributed to, or the benefits received from, an activity are inequitable, in effect the subsidization of some participants, it may be increasingly difficult to justify cooperation.

Technology may well prove to be the Jekyll and Hyde of library cooperation. As the benign and creative Jekyll, it is capable of improving almost every library function including services to clients, preservation, management practices and communication. As the alter ego, Hyde, it has the potential to disturb the equilibrium which governs cooperative activities. While there has always been inequality among libraries, emerging technologies are likely to widen the differences. Libraries which cannot afford the requisite infrastructure, particularly access to the major networks, may well find themselves isolated and considered undesirable partners in cooperative ventures.

Communication technology has long been an important component of library cooperation. Libraries readily moved from telex to electronic messaging and adopted facsimile transmission before most other sections of their parent organizations. In the academic sector, high-speed data networks

have become major channels of communication and have the potential to provide libraries with a new framework for inter-action. The use of digital, rather than analog, formats to trans-mit information requires very complex networks but also provides greater flexibility to alter the configuration of the network as needs and technology change. The extent to which a library has access to network technology and can participate in network activities will determine the coopera-tive alliances which it develops and will be regarded as a per-formance indicator.

Data networks have the capacity to move very large amounts of information throughout the world at ever-increas-ing speeds. As yet, the use of these networks to provide access to library-type information has been slight. While there is access to a number of library catalogues and to some data-bases, the bulk of traffic on the Internet is related to file trans-fer and electronic mail. The opportunity for innovative approaches to information provision using these networks is considerable but not as limitless as many would hope. Restrictions will be imposed by network design, cost, trans-mission capacity and management philosophies; by the will-ingness of data producers to permit network access at reasonable cost; by the information literacy of data users; and by the capacity of agencies such as libraries to adjust to new modes of operation.

There is a tendency to base cooperation on formal struc-tures which mirrored those used by commercial organizations or government bureaucracies. Such structures provide legiti-macy and authority to the cooperative activities but they also may inhibit creativity and innovation. Some formal arrange-ments are required to audit the use of resources associated with projects but, in a network environment, central control of equipment may not be necessary. For most projects, resources can be located anywhere on the network and phys-ically controlled by participants. In many cases, shared needs and a relatively standard legal contract, rather than member-ship of a common organization, will be the future bond between participants.

The Council of Australian University Librarians (CAUL) has embarked on a project to provide access to information data-bases using the Australian Academic and Research Network (AARNet) as the communications channel. Although CAUL may be regarded as the nominal owner of the activity, the database project does not require the Council to possess or control any hardware, nor to establish a management struc-ture. The data and the search/management software will be leased, and a third party will contract to offer the service using its own hardware. All participating organizations will be required to sign a legal contract which specifies their rights and obligations, and they will be able to contribute to the for-mation of policies affecting the project but will not be involved in the actual management of the service.

Not having an established structure is disadvantageous when initiating such projects. Without an existing manage-ment entity, each project requires a re-evaluation and defini-tion of matters such as ownership, legal responsibilities and management requirements. Ideally, however, this process should ensure that the management arrangements are tailored to the project and are flexible enough to cope with changes in the nature of the project. Too often, projects are required to conform to the parameters of a management structure established for different purposes.

The CAUL project is feasible due to the development of local area networks linking computers within each university. The complexity and configuration of these local networks varies considerably depending upon factors such as when the institution adopted network technology, extent of investment in networks and institutional acceptance of the validity of net-working. These local networks are linked to the Australian Academic and Research Network (AARNet) which was estab-lished by the Australian Vice-Chancellors' Committee in 1990. Similar national and regional networks exist throughout the world and together form the Internet. Several million individuals, mostly connected with educational and research

organizations, have access to the Internet although the actual number of users or connected computers is unknown as there is no central management.

Financing this hierarchy of networks is complicated but in many ways represents the ultimate in international coopera-tion. In general, the costs associated with establishing and extending national networks are of such magnitude that gov-ernment assistance has been essential. In the 1992 Australian Federal budget, $13.5 million was promised for the develop-ment of the Australian Academic and Research Network but with matching funding to come from the user community and industry. It is not yet clear what effect this will have but the existing hegemony of the Australian Vice-Chancellors' Committee will be challenged by other funding contributors. The future will require a different management structure and philosophy, and the formation of new alliances.

The implications for libraries may be far-reaching. While the network remains within in the academic environment, there is support for the network to be regarded as infrastruc-ture to be funded without regard to transactional use. The academic ethos is receptive to libraries using the network to provide access to information but increased commercialization of the network may alter this premise. User-pay mechanisms may be implemented, or restrictions imposed on the type of activities for which the network can be used. Nevertheless, these networks create an ideal environment for cooperative ventures especially those involving expensive information resources.

Government promotion of open learning is likely to require the extension of AARNet to all education sectors, public libraries and industry. New avenues for cooperation will be created but participants will be expected to make equitable contributions either financially or by the supply of services. It is unlikely that there will be a distribution of funding to per-mit the development of print collections in public and TAFE libraries throughout the country. The emphasis is likely to be on the use of AARNet to access library catalogues, databases and other information resources, and to provide a means for document delivery. Although the physical access point may be an AARNet terminal in a local library, the delivery of infor-mation services will be the responsibility of the enrolling insti-tution. There will, however, be opportunities for other libraries and organizations to offer services for which individ-uals are charged. Extension of AARNet will enable libraries to be more involved as publishers of information and to provide document delivery services.

Changes in the nature of scholarly publishing will have considerable effect on cooperation between libraries. A decrease in the amount of information published in print for-mat may result from greater use of data communications net-works for the informal interchange of ideas and research findings. This in turn may lead a rise in the value and prestige of that information which is published in traditional formats[1]. This may well occur in some disciplines, but there will be others in which electronic publication will be deemed the most prestigious and appropriate. Whatever format is used, there will be a re-evaluation of the alliances between the par-ticipants in the publishing process.

As yet the use of information technologies, such as CD-ROMs and remote access databases, has increased rather than reduced the infrastructure investment of libraries. Although library clientele now have access to a wider range of information and can often locate required information more easily, the acquisition costs mirror those of print publications. Reduced profitability of print publications will provoke publishers to seek other means of protecting their existing investments and their future economic viability.

Publishers will not cease to exist, but new categories of publishers will emerge. At one end of the scale will be those corporations which can afford the investment required to take advantage of emergent technologies. In many cases, these organizations will be those which are already dominant in scholarly publishing and which possess sizeable assets in terms of intellectual property rights. At the other end of the

scale, a variety of desktop technologies will enable individuals or organizations to disseminate their own information. Unless they are supplying specialist markets, many of the existing publishers who currently occupy the ground between these extremes will cease to exist.

Control of intellectual property and the ability to deliver information on demand will become important factors in deciding which publishers survive. They will be influential factors in determining the nature and extent of library cooperation. Many of the technologies that facilitate electronic publication can assist copyright holders to monitor the use of their intellectual property and seek recompense. As libraries adopt media such as CD-ROM and on-demand document delivery as alternatives to the development of print collections, authors have greater ability and incentive to recoup their intellectual property investment. Current notions of fair dealing which are enshrined in copyright legislation will come under increased scrutiny. For some authors, developments in information technology will be beneficial. Demand for their work will be sufficient to justify commercial print publication. For the majority of scholarly writers, however, there may be no economic benefit from the publication of their intellectual efforts and they will either have to forego publication or find alternative media. Where the alternative involves electronic publication, there may be no guarantee that their work will continue to be part of the database once demand lessens.

These changes have significant implications for library cooperation. If libraries are to continue to participate in the provision of scholarly information, librarians will need to become more involved in the publishing process. New technologies provide publishers with the means to deliver their products directly to end-users and to deny access to those who do not have the ability to pay. Librarians have a twofold response to make in such an environment. Firstly, to ensure that they offer services of a nature which are attuned to the needs of their potential clients, and secondly to provide access to that information at a reasonable cost.

In delivering information to their clients, librarians will need to strike a balance between cost and the importance of the information to the requester. The concept of free access to information may be *politically correct* but it is hampering the development of library services which are able to effectively meet client needs and which are able to be competitive in an information environment which is changing rapidly. Technology has the capacity to raise the service expectations of library clients. In the future, libraries will be evaluated in terms of the effort needed to locate information, the rapidity of delivery and the relative cost.

In order to meet the challenges which arise out of the changing conditions, librarians need to set strategies to cope with new methods of information storage and delivery infrastructure. This involves investing in an infrastructure, funding innovation, forging alliances and developing economic models. Much of this is alien to everything librarians have held dear and will require radical change which will be greater than many will be able to survive. Some individuals will be redundant because the expertise they have honed so diligently for years is no longer applicable. Many managers will have difficulty adjusting to an environment in which more of their subordinates have access to information and are involved in decision making. Librarians at all levels will be challenged by changes in the publishing process.

If electronic publishing is to be effective,new forms of alliances will be needed between librarians, distributors, publishers and authors. Publishers in general operate within the same economic environment as libraries and without the library market most academic publications, particularly serials, would not be viable. Many librarians see electronic publishing as the means of freeing libraries from the publishers' yoke and are promoting the concept of universities becoming more involved as publishers[2]. This view often underestimates the role played by the better publishers and takes little account of the vested interests of those authors who serve as members of the journal editorial boards[3].

For publishers, the development of electronic publishing is unsettling and threatening. Fearful of losing their place in the publication process, some have sought to protect their investments by licensing rather than selling their products, and by using the technology to ensure that their licensing provisions are honored. Attempts by some publishers to charge according to the number of potential users of a database indicates that they are unaware of network development and use in academic institutions. Many authors, publishers or librarians have not yet contemplated the implications of network technology.

In 1990, the Association of Research Libraries, CAUSE[4] and EDUCOM [5] formed the Coalition for Networked Information (CNI) to advance scholarship and intellectual productivity. The Coalition promotes the provision of information resources on existing and proposed networks, addresses public policy issues and assigns priorities for the provision of information resources on the National Research and Education Network (NREN). As a partnership of library, computer and technology professionals and their client groups, the Coalition is typical of the cooperative alliances which are required in the present information environment.

An Australian version of the Coalition has yet to be formed but the Australian Vice-Chancellors' Committee has established a Standing Committee on Information Resources to bring together representatives of the various elements of higher education responsible for the provision of information services or the control of information resources. It is expected that there will be several sub-groups dealing with specific issues but the overall aim is to promote a greater synergy between those responsible for library, computer and management information services, and to develop national strategies which will enable Australian universities to make the best use of available resources.

Although the Standing Committee will fulfil valuable coordinating and monitoring roles, its membership is limited and there remains a need for librarians to participate in other alliances which are related more closely to the provision of bibliographic information. Although Australian librarians may be able to exert little influence on the book trade, they need to be aware of international activities and develop links with bodies such as the Electronic Data Interchange group[6] . At the same time, there is a need to review existing local cooperative arrangements for interlibrary loan and reciprocal use of collections to ensure that they make best use of available technologies and are flexible enough to change.

Australia has a sophisticated interlibrary loans service, with a voucher payment system and standard charges, all of which works very well. Its efficacy has depended on the willingness of large institutions to underwrite the the system by agreeing to supply items at less than the cost of supply. In the past, net lenders with their large resource bases and infrastructure were prepared to absorb these costs as their contribution to the common good. Over the years, several of the large net lenders have attempted to increase the charges for interlibrary loan and have been opposed by those who subscribed to altruistic cooperation and by those smaller institutions which depend heavily on interlibrary loans. Changes in the financial climate and the effect of new technologies may now require a complete overhaul of the Australian interlibrary loan system.

All institutions, large and small, are facing budget restrictions. For many of the large institutions those restrictions are of such magnitude that they cut deeply into the infrastructure. Where once a large university could generously support the national interlibrary loan system, it may not be possible for much longer. On every campus there is support for greater accountability and for the protection of institutional benefits and advantages. Budget constraints have resulted in the cancellation of serials, reduction of services to users, and the elimination of staff positions, and have added substance to calls for complete cost recovery for services offered to non-institutional clients. In some instances, there is support to charge members of the university for services which are considered added value.

Technology is playing a decisive role in this process. It is often easier and more efficient for the University of Wollongong to acquire a copy of a document via the UNCOVER service in Colorado than to use an Australian library. Despite the costs involved with such a service, it meets the needs of that proportion of our client base which requires rapid supply and has the money to pay for it. Although the Australian fast-track interlibrary loan service can probably supply as rapidly, the UNCOVER database and document ordering facility is easier to use and permits academic staff to order directly.

Over the next few years more commercially based document delivery services will come available. Some will be offered by libraries, some by publishers and others by subscription agencies. Irrespective of who manages them, the underlying aim will be to provide requested items as rapidly as possible for a given price. Although many library clients are prepared to forego rapid delivery in order to receive the item free of charge, speed of supply will be a significant indicator of library performance.

While not advocating the abandonment of the existing interlibrary loan system, some revision is necessary to ensure that it covers the costs incurred by the supplying library. There will be little incentive to improve the service if costs are not adjusted and less reliance placed on goodwill. Technology provides the opportunity to reduce costs in some instances but while the transactional cost may be less, the capital and infrastructure costs may be quite high. It is necessary to make the initial investment and to continue re-investment to ensure that facilities remain compatible with other institutions.

What technology does permit is the forging of new alliances. Technology, such as the ARIEL scanning software, document delivery services operated by other libraries, as well as the services offered by a range of commercial organizations all provide different opportunities and a need to establish different types of alliances. It is a different level of cooperation and requires a different set of skills and attitudes. In universities which do not have large research libraries, the academic community may place more emphasis on speed of access than on purchase or support for concepts such as the distributed national collection. Attitudinal changes of this sort will be accompanied by increased pressure to use book vote funds to acquire information on demand rather than purchase.

The ADONIS system is typical of the kind of service which may predominate in some research disciplines. Developed and tested over ten years, ADONIS was launched in July 1991 and provides full-text access to more than 400 journals from about 40 publishers in the bio-medical field. Partners in ADONIS include major publishers such as Elsevier, Springer-Verlag and Blackwell Scientific. Their objective is to provide users with document delivery service which is faster and more efficient than traditional photocopy services, and give publishers more control over copyright material[7]. The members of ADONIS are aware that they need to cooperate with libraries and product development involved extensive testing by libraries throughout the world.

There is nothing new in libraries and commercial organizations cooperating. Systems vendors have fostered mutually beneficial relationships with libraries to assist with the refinement of library automation facilities. The New South Wales library cooperative, UNILINC, worked with the 3M Company to test client-operated book checkout equipment. In return, members of the cooperative receive discounts when purchasing the equipment. Similar arrangements are common throughout the world but they tend to be non-contractual and use mutual benefit as the moderating force. In times of economic buoyancy, these arrangements fare well but market downturn and personnel changes can place strain on the relationships. Librarians may well need to reappraise the value of their contribution to cooperative ventures with commercial organizations, and ensure that they receive due reward for their efforts. Although greater use of formal contracts may add a layer of difficulty, and certainly involves some cost, it enables all participants to document their rights and obligations.

Application of a similar approach may be appropriate to activities such as reciprocal borrowing. There is already a considerable amount of inter-institutional use of library collections, especially in major metropolitan areas. The demand for access will increase as open learning programmes are developed and it becomes easier for undergraduate students to interrogate catalogues of libraries other than of the institution at which they are enrolled. How rapidly open learning will grow is yet to be seen but there will be impact on the national library system. If students are encouraged to enrol in higher education irrespective of their geographic locations, and they are required to pay tuition fees, there will be an expectation that they will receive a range of support services including access to library materials.

Although there are protocol difficulties, the Internet provides access to hundreds of library catalogues throughout the world. While impressive, much this access does not impinge greatly on individual libraries unless searchers are within travelling distance. To assist their clients, many libraries are investigating ways of simplifying access to other catalogues. In terms of service and better use of collections, these initiatives are admirable but merely tantalize if they are not accompanied by access to the full-text. Easier access to a library's catalogue will increase demands on the collection by non-institutional users. The major demand will be for the extension of borrowing privileges especially for undergraduate students.

Enrolling institutions have an obligation to support their students and should be expected to provide at least 90% of the information resource requirements of course work students. While part of this provision can be achieved by the use of resources at other institutions, it is unrealistic to expect that it will be provided without cost. Use of library collections at other institutions needs to be classified as a value-added service and one for which a realistic charge is made. Some institutions are exploiting existing arrangements by not providing adequate support for their students in the knowledge that the students will be able to use the resources of other institutions.

At a time when all Australian university students were funded from government sources, there was some validity for arguing that reciprocal borrowing was an integral part of the concept of a national, unified system. The equation changes, however, as more students pay fees, competition to attract students increases, library budgets contract in real terms, and there is pressure to divert funding to information technology infrastructure. Although charging for reciprocal borrowing may have drawbacks, it has the advantage of placing a value on the service involved and permits institutions to determine to what extent investment in their own library is more viable than contracting with another institution for the provision of services. Should an institution decide not to fund reciprocal borrowing charges, students will need to determine whether it is in their best interest to fund the cost themselves.

Charging for a service does not mean the demise of cooperation but merely places it on a different footing. Librarians need to recognize that they are in an increasingly competitive environment which requires a re-appraisal of attitudes as well as methods of operation. Access to international networks, the capacity to fund the acquisition of technology, and the ability to be innovative will effect significantly the future cooperative activities in which libraries are involved. This will be accompanied by charging for services previously available free or at less that operating cost, and the forging of stronger alliances with other sections of the information industry. In particular, librarians need to act now to ensure that they are not excluded from the scholarly publishing process as it becomes increasingly electronic. Neither libraries, nor the institutions they serve, are likely to replace commercial publishers but they presently have the capacity to exert influence on how information will be made available and on the type of cost structures that govern access. For Australian libraries, this

means establishing strong links with international organiza-
tions, such as the Coalition for Networked Information, as
well as establishing national mechanisms which can bring
together all of the players involved in the information process.

FOOTNOTES

[1] R. N. Katz. "Financing new information access paradigms, or
why academic information managers need cost models".
Cause/Effect 15(2) 1992, p9.
[2] Okerson, A. "The Missing model: a 'circle of gifts'". *Serials
Review* 18(1-2), pp92-96.
[3] Campbell, R. "The commercial role in journal publishing:
past, present and future". *LOGOS* 3(1) 1992, pp106-112.
[4] An association for management of information technology in
higher education.
[5] A consortium of colleges, universities and other institutions.
[6] Established by the European book industry (including
library, publishing and bookselling sectors) to develop stan-
dards compatible with the UN-sponsored EDIFACT format.
[7] P. Schlicke. "ADONIS". *Information Management Report*
May 1992 p. 1