Changing library spaces:
finding a place for print

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Abstract:
This paper considers the storage options for print collections in a digital environment. Recent changes to library space use in particular are reducing the space available for print storage and forcing libraries to look to other solutions, including print repositories. These potentially produce benefits to the networks of libraries they serve, to individual libraries within the network, and to the communities of researchers using those libraries. The paper emphasises the Australian situation, and the discussion encompasses the policy developments that are necessary to optimise the benefits of a fully implemented national print repository for Australia.

Introduction

Libraries are currently engaged in a period of rapid change, for which the word revolution is an apt description. Many libraries, and in particular those associated with education and research services, are transforming from physical places associated with fixed points of service and physical collections, to multi-faceted providers of remote services providing digital collections in virtual spaces. The implications of this shift in relationships between libraries and their users, collections and content providers are still to be fully understood.

Not only do libraries need to continually modify collections and services in order to attain the benefits resulting from the rapid shift to digital content, but they do so at a time when their core services are vulnerable to challenges in the wider, commercial information environment. It is at least possible, indeed likely, that the effect of mass-digitisation programs currently being undertaken will induce further significant changes in the nature of library services and collections, and in the types of relationships that libraries will build with users and content providers.

The purpose of this paper is to focus on one aspect of the current and likely future changes: the utilisation of physical space. In particular it considers the issue of future storage of print collections in the increasingly digital environment. The challenges faced by libraries in this regard are manifold. What options are available for the future storage of existing print collections? What items should be preserved for the short term, and what should be preserved in perpetuity? Who should take responsibility for the long-term storage of print? What should be stored at a regional, national or international level? And indeed, in a world facing the potential of massive 'google-isation' of existing print materials, will even the role of libraries in the collection and storage of print be called into question?

Certainly outside of libraries it is sometimes believed that all information or knowledge is, or soon will be, available in digital form on the Internet. It is clear, however, that the current mass digitisation efforts will fall well short of encompassing all print content. In particular the emphasis of such programs is on 'popular' rather than reference or research oriented material, and the types of items found in special collections are largely excluded. In addition, legal constraints critically affect delivery (e.g. full text vs bibliographic record), and compromises are frequently made in terms of quality and scalability, with scanning of a non-archival standard. Current estimates are that only around 12-15% only of the estimated 65M titles in print will be made available digitally (Hughes 2007). It is therefore the case that rather than relying on the development of comprehensive 'digital libraries', a better strategy for the library community would be to design services aiming to "deliver digitally" (O'Connor 2004).

This paper focuses on a strategy for long-term storage of print material that is being increasingly favoured both in Australia and internationally. This is the repository; a form of collaborative storage that brings together low use items in a secure environment with the intention that they are held in perpetuity. Crucially the repository is not a form of 'dark store' preserving a final copy in perpetuity, but rather an active collection with loan copies available for physical or, preferably, digital delivery.

Changing library spaces

One of the impacts of the digital revolution on libraries has been to bring about changes in the utilisation of physical space. These changes vary according to the type and function of a library, but they are generally a response to the increased demand for space to be provided for public access computing facilities; and for shared, networked teaching and learning areas, often referred to as a learning commons or information commons. As a consequence, space previously available for storage of physical collections is being encroached upon and in many cases significantly reduced.

At the same time libraries are also encountering institutional reluctance to alleviate the problem by providing new or extended buildings. Many universities and major inner city libraries face severe shortages of land; the capital required to fund new buildings has grown substantially, and there is a belief amongst funding institutions that the uptake of digital content *should* have reduced the need for additional space. Where libraries are fortunate enough to be funded for renovations or new buildings, the spaces are being designed very differently than was the case when collections were dominated by print. The emphasis is no longer on producing rigid modular space designed for the permanent storage of infrequently used print resources and the individual study desk, but rather on flexible, communal and wired spaces designed to facilitate shared, interactive and ICT-enabled research and learning.

In these circumstances, many libraries are turning to forms of high-density, and frequently off-site (remote), facilities as a solution to their print storage needs. High density, remote storage has a long history of use by research libraries (Block 2000). The advantages of this form of storage are found in the reduced cost of land and building that can substantially reduce long-term costs. The savings from using off-site storage can be considerable, with a study conducted at the University of Melbourne concluding that the cost of "retaining a low use item in the main library at the University of Melbourne was four times greater than relegation to storage" (CHEMS Consulting 2005, p.25). The disadvantages lie in the reduced access to stored material, resulting in a further reduction in the use of items that are often stored on the basis of their already low use (Hill, Madarash-Hill & Hayes 2000). The evidence indicates, however, that the use of remote storage has increased in recent years and will expand further as improved technologies for storage, discovery and delivery further reduce costs while alleviating access problems (Reilly 2003; Payne 2005; Seaman 2005; Deardorff and Aamot 2006; Agee & Naper 2007; Payne 2007).

Print repositories

A print repository is a form of storage that brings together low use items from a number of libraries in a secure environment where they may be held indefinitely. The use of print repositories to provide a strategy for long-term storage of print material is being increasingly favoured both in Australia and internationally, as they produce benefits to the networks of libraries they serve, to the individual libraries within the network, and to the communities of researchers that depend upon those libraries. Such facilities are sometimes purpose-built and sometimes housed in existing buildings adapted for the purpose. Although many research libraries operate 'stores', which might either be 'local' or 'remote', the repository is distinguished by its collaborative element. That is, a repository serves as a storage site for two or more

libraries, and it is this amalgamation of storage that is crucial to achieving the economies of scale that are essential to reducing the cost of long-term storage. Indeed a comparatively recent development has been in the scale of storage facilities, with libraries increasingly realising that developing 'industrial' scale facilities directly benefits cost-effectiveness, and that this can be best achieved by two or more libraries collaborating (Chepesuik & Weeks 2002).

While several models exist for the management and operation of repositories they share a desire to take advantage of the economies of scale that result from pooling the use and cost of physical and service infrastructure. In some cases where several libraries use a joint-facility they may be merely sharing space to store independently managed collections, or there may be some form of shared management of the collections within the facility. In their most fully developed—and efficient—form, however, repositories require contributing libraries to cede ownership of items to create a single collection that becomes the property of the repository or some other independent body. It is in this way that the greatest efficiencies are achieved, by enabling maximum storage densities, eliminating duplication within the repository, and encouraging contributing libraries to de-duplicate local collections by ensuring that at least one copy will be permanently retained in the collection.

For material predicted to have little future use, the cost of obtaining an occasional loan from a repository is more than offset by the savings made by the need to provide storage space for rarely used items. The existing literature on repositories also emphasises the need to optimise access through local and federated/union catalogues and other tools to aid in the discovery and delivery of stored items (Dempsey 2006). Service levels commonly include digital delivery to a user's desktop when feasible, and daily turnaround of physical items. It is because of this emphasis on enabling discovery and delivery that we find that, somewhat paradoxically, a physical storage facility can be central to emerging digital access and delivery systems (O'Connor 2001). The critical role for repositories in the digital world is to manage the low-use legacy collections that will never be digitised and to provide access to them using a defined service and pricing model (O'Connor 2005). Many repositories also offer reading rooms for onsite repository use, although direct access to the shelves is usually not possible due to high-density storage conditions.

International repositories

Over the past 25 years a number of repositories have been established to provide storage space for library materials. In the United States, these repositories are largely the products of inter-institutional efforts undertaken by public and private higher education providers. These inter-institutional repositories typically operate on a regional basis, and they differ in function, if not in form, from the high-density shelving facilities developed off-site by major university libraries such as Harvard and the University of Texas. These regional repositories are cost-effective solutions to collections storage, and also a way for institutions to work together and pool resources to manage significant portions of their holdings. They commonly incorporate a shared inventory-control system, are subject to common standards for barcodes and labelling, and library materials are stored in standardised units (Bridegam 2001). A number of these repositories are exploring moving beyond

serving their regional or founding communities to participate in national and international networks for cooperative preservation (Reilly 2003; Payne 2007).

There are a number of regional repositories currently operating in the United States. These include the Washington Research Libraries Consortium (WRLC). The WRLC is a regional consortium supporting the information and research needs of 8 universities in the Washington DC area. This voluntary alliance grew out of a long-standing reciprocal borrowing program that began in the late 1960s. WRLC focuses on 3 major programs: a shared library system, reciprocal borrowing and document delivery and offsite storage of 'low use' library and university materials.

The University of California operates 2 storage facilities, the SRLF (Southern Regional Library Facility) in Los Angeles and the NRLF (Northern Regional Library Facility) on the University of Berkeley campus in San Francisco. The facilities are funded by the University and governed by the Shared Library Facilities Board, which includes all 10 University Librarians. Each depositing library retains ownership and makes independent decisions about what to deposit. Duplicates, however, are not permitted, and deposited materials may be recalled but not withdrawn.

The Centre for Research Libraries (CRL) is a consortium of North American universities, colleges, and independent research libraries. The consortium acquires and preserves traditional and digital resources for research and teaching and makes them available to member institutions through interlibrary loan and electronic delivery. CRL holds over four million newspapers, journals, dissertations, archives, government publications and other traditional and digital resources for research and teaching. CRL's primary objectives are to provide economical storage, preservation and increased availability of infrequently used materials.

In the US there is as yet no coordinated approach to the development of shared regional stores, but there is evidence of increasing interest in the concept. This was made apparent when the Task Force on the Artifact in Library Collections, operating under the auspices of the Council on Library and Information Resources (CLIR), issued its final report recommending the development of a network of "regional repositories". The Task Force report called upon librarians and researchers to act collaboratively and:

> Advocate for the development of regional repositories of artifactual collections that reduce duplication of effort, create economies of scale, and ensure that the greatest number of unique or scarce priority items are preserved and made accessible to researchers (Task Force 2001).

Building on this report, CLIR commissioned a second report that provided a more detailed analysis of the issues involved in implementing such repositories, concluding that:

> With the appropriate resources in place, one could imagine the major North American research libraries, regional repositories, and national-level repositories linked in a network that enables strategic management of the important primary resources for scholarship (Reilly 2003 p. 40).

European countries have led the way with the implementation of national repositories. The National Repository Library of Finland, founded in 1989, is a repository for all libraries in Finland and was created to provide a cost-effective facility for the storage of library material. As a result, the need to build new space for library collections is decreased (Vattulainen 2004). The material in the Repository Library is received as transfer from other Finnish libraries and becomes the property of the Library. Similar national repositories have been operating since the 1990s in Norway (Henden 2005) and France (Vattulainen 2004).

The European interest in national repositories has also been apparent in recent developments in the United Kingdom. Scotland implemented a national academic library store - the Collaborative Academic Store for Scotland (CASS) - in 2004 (Nicholson 2005). CASS was developed as a joint initiative of the Scottish Confederation of University and Research Libraries and the National Library of Scotland. This model of collaborative activity between academic libraries and a national library has also been implemented in England, where the lead in repository development was taken initially by the Higher Education/ British Library Task Force reporting to the Research Support Libraries Program, and subsequently by the Consortium of Research Libraries in the British Isles (CURL) working in conjunction with the British Library and the Research Information Network (RIN).

A key outcome of the UK activity has been the completion of the 2005 report, *Optimising Storage and Access in UK Research Libraries* (CHEMS Consulting 2005). After a period of consultation during 2005 and 2006 this report resulted in the adoption of the so-called "Option 4", which is based around a repository system - the UK Research Reserve - based on the collections of the British Library.

It is therefore apparent that repositories can function effectively on a regional basis, but that they also have the capacity to be scaled up to the level of a national service. It is perhaps tempting to compare the US with its proliferation of regional services with the European countries that have opted for national solutions and conclude that geography is a determining factor. In an era of digital discovery and delivery coupled with high-speed physical delivery, however, this need not be the case. The scale of regional collaboration in the US has largely been determined by the 'accident' of state borders, and there are no compelling reasons as to why much more geographically dispersed repositories would not operate as - or even more - efficiently. In a recent study undertaken for OCLC Lizanne Payne reported of the North American situation that:

> as the transition from print to electronic information access continues to unfold, academic institutions should collectively reassess system-wide supply and demand for library print holdings: the library community could provide lasting benefits to scholarship and economies to their institutions by proactively developing a collaborative print repository network on a regional, national or global scale. (Payne 2007 p. 7)

As Payne suggests, print repositories are a compelling option for library space management, with a key issue being the manner in which they are scaled to achieve optimum benefit.

Australian repositories

The first collaborative repository in Australia was initiated in 1983 between Flinders and Adelaide Universities. The University of South Australia joined in 2003, and the facility is now known as URRSA (University Research Repository South Australia). URRSA provides secure, high density accommodation for lesser used volumes transferred from the three university libraries, and is located on campus at Flinders University in an energy-efficient building with a capacity of 1.5 million volumes and over 50km of shelving. It has been claimed that URRSA

> has a track record of providing cost effective and efficient service to its partner libraries and their users. It is an economic, secure, low technology facility, that has proven to be very successful in the preservation and delivery of information and in alleviating pressure on prime library accommodation (Baudinette).

Currently the contributing library retains ownership of items, however the possibilities for shared storage and shared collection development utilising the advantages of close physical proximity and a shared library system are being explored (Livingston 2007).

Australia's second major repository, the CARM (CAVAL Archival and Research Materials) Centre was opened in 1997. This environmentally controlled, secure, high-density facility was designed to meet best practice for the long-term storage of print library materials and is managed by CAVAL on behalf of its members. Members cede ownership to items contributed to the CARM collection, which is a single copy only collection, although some libraries also lease space for the storage of collections over which they maintain ownership. Initial membership was confined to libraries from Victoria, however this has now been expanded and the universities of New South Wales, Western Sydney and Tasmania have joined. The CARM collection is made accessible to researchers through the inter-library loan system, with material delivered 'digital to desktop' wherever possible (Hardy et al 2007).

Several Universities are also using CARM for the storage of University Records. Additionally space is leased to a number of cultural institutions for environmentally controlled storage of items such as libraries on the move, newspaper collections, forensic files, audio tapes for visually impaired, antique furniture, manuscripts, paintings and museum objects.

The CAVAL Board commissioned a feasibility study in late 2006 for an expansion of the CARM Centre, to be called CARM2. This study demonstrated an unmet demand for storage space and identified that CARM2 should include a mix of shared collection, individual library storage, and records storage solutions. The optimum size was determined to be 28 km of new shelving capacity, and the Centre should be designed to provide ideal storage conditions and associated infrastructure. The facility will provide major savings to universities in the long term. The CAVAL Board has recently endorsed the progression to a strategic design phase for CARM2.

Space management in Australian research libraries

The rates of acquisition and disposal by Australian academic libraries are recorded in the annual statistics provided by the Council of Australian University Librarians (CAUL). The results for the most recent eleven years for which figures are available (1996-2006) suggest that disposal has become an increasingly important means by which libraries manage collection growth.
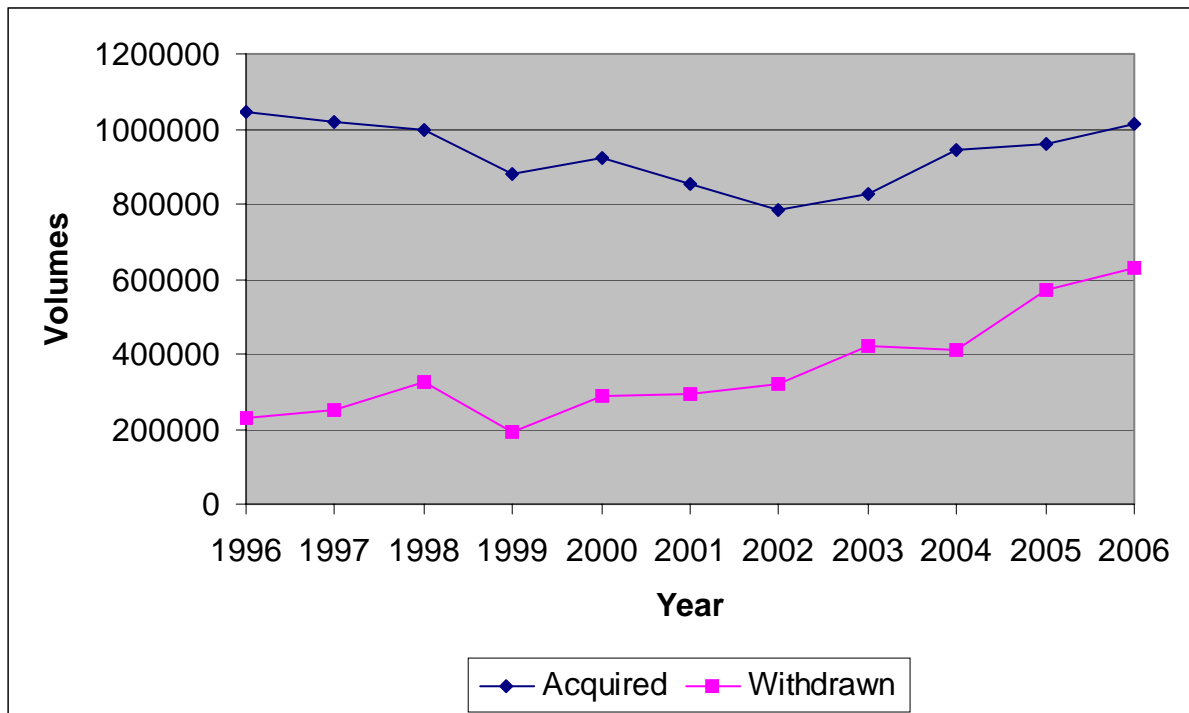

Figure 1. Non-serial volumes added and withdrawn by CAUL libraries, 1996-2006

Figure 1 records the acquisition and disposal of non-periodical volumes only and does not include the number of periodical volumes disposed. The data indicates that the rate of acquisition (measured in total volumes acquired) declined from 1996-2002. The period of decline can be attributed to the impact of the 'scholarly publishing crisis' that saw libraries reduce monograph acquisitions in order to maintain increasingly expensive periodical subscriptions. This has been followed by a period of recovery from 2003-2006. This post-2002 recovery likely reflects the widespread implementation of access to large-scale databases of full-text periodicals, which has allowed libraries to stabilise their periodical content and refocus attention on non-periodical holdings. As a result the number of volumes acquired in 2006 (1,012,307 volumes) had effectively recovered to the level recorded in 1996 (1,046,378 volumes). This recovery indicates the important role that print material continues to play within the CAUL library collections, and there is no reason to believe that this upturn in the acquisition of print volumes will not continue.

Figure 1 also records the annual disposal of non-serial volumes for the same period. The disposal data records a consistently upward trend, capped by a sharply upward movement in 2005 and 2006. The low point for disposals was 1999 (192,957

volumes), which contrasts with the 2006 figure of 631,877 - an increase of 227% in just seven-years.

The data in Figure 1 is also revealing if used to graph the annual net gain in non-serial volumes held by the CAUL libraries for the same period (Figure 2). In this form, it reveals a declining trend in the net growth of collections over this decade that was only significantly reversed in one year, 2004. The high point for net gain was 1996 (818,042 volumes), and the low point 2006 (380,430 volumes).
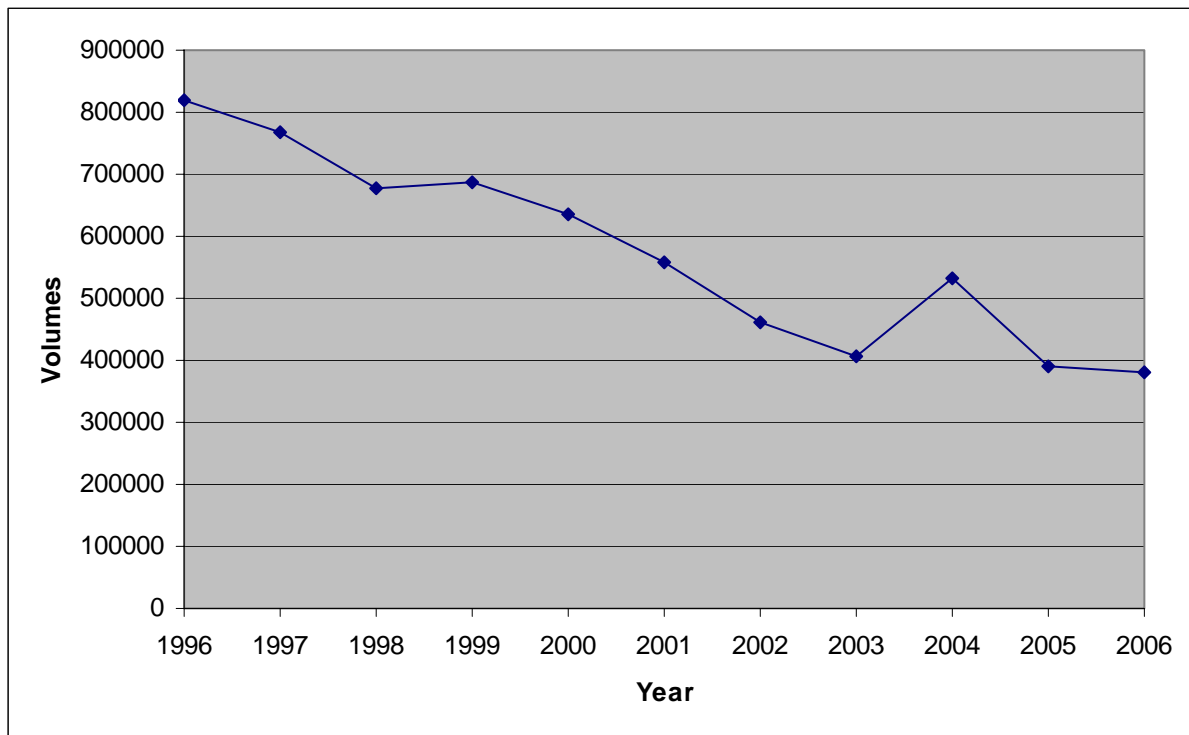

Figure 2. Net gain in non-serial volumes by CAUL libraries

It is apparent that if this rate of decline in the annual net gain continues for another decade, Australia's academic libraries will have reached a collective steady state for non-serial holdings. While such an outcome might 'solve' the storage problem, it would be of questionable benefit in terms of building the nation's research infrastructure.

There are of course various reasons why libraries might dispose of items, but it is frequently an indicator - particularly for research libraries - of storage levels being at or near capacity. Given an environment in which space for local high-density storage is difficult to acquire, Australian academic libraries are choosing to permanently discard material as a means of managing collection growth. The trend data reported in Figures 1 and 2 indicate that these libraries increasingly rely upon disposal in order to address the problem of limited storage. It is worth noting that a number of Australian academic libraries now have a stated policy of a 'steady state' collection. Such policies are clearly driven by the realities of lack of storage space, and are contrary to the model of retention and growth that has long been the basis for developing research collections.

As a library serving a research institution all items in the collection may have some value to our clients in the future and this can be difficult to anticipate ... (However) the library must confront the problem of accommodating tens of thousands of extra volumes acquired each year. (Monash University Library 2006)

The Library ... adds material to its collection on the basis that this material is intended to be kept permanently. It also recognises that to maximise access, wherever possible, its collections should be on open access. However, there is a finite amount of space in each branch library. Approximately 66,000 volumes are added to the collections overall each year. A similar amount of material must therefore be relocated to alternative storage to retain a net balance. (University of Queensland Library 2007)

 ... shelves in some areas are overcrowded and cannot accommodate any more volumes ... Consequently, UNSW is a steady state Library, with the intake of new material offset by the relegation or disposal of corresponding quantities of existing holdings. . . UNSW is now in a position where we must remove a significant number of volumes periodically to make room for new acquisitions as well as allowing for changing services which require different use of existing space. (University of New South Wales Library 2006 p.13)

Statements such as these make it quite clear that storage and disposal are not always activities undertaken willingly, but because they are forced upon libraries as a necessity imposed by the lack of local storage space.

Disposal is not of course necessarily undesirable. It is an important part of good collection management, for several reasons, perhaps the foremost of which is the need to reduce the cost involved in the duplication of rarely-used items within a library system. If, however, disposal is to be justified on a system-wide basis, then it is also the case that the policy and procedural frameworks that support the activity should also have a system-wide basis.

In the current circumstances, however, where there is very little coordination or consultation between Australian academic libraries with regard to disposal, the activity is accompanied by some dangers. For although most of these libraries have a disposal/discard policy, these policies have little consistency in terms of the priorities that are set for disposal; they have quite different definitions of what constitutes a 'last copy', and they have varying safeguards in terms of ensuring that discarded items are available elsewhere within Australian libraries.

An alternative
Research libraries in Australian have common interests regarding storage and/or disposal of print material. These are:
1. That items that are not in immediate demand should be either stored in as cost-effective manner as possible or permanently discarded.

2. That items are discarded only when it is certain that there is at least one other copy to be permanently retained in the national collection.
3. That stored items should be held in sites with high conservation and preservation values.
4. That stored items should be available for rapid retrieval using state of the art technologies for discovery and delivery.

There are currently few Australian libraries that can confidently state that they meet any or all of these goals. It is likely, however, that those with access to the services of the URRSA or CARM are the best served.

Large-scale, collaborative repositories provide the only means by which even the largest libraries can achieve the necessary economies of scale with regard to storage, discovery and delivery of stored material. It is only in an environment served by either a national repository or a network of regional repositories that Australian research libraries will be able to consistently achieve these goals.

In these circumstances, it is hardly surprising that there is a growing interest in collaborative storage and repositories, as evidenced by the growth of the non-Victorian membership of CAVAL. There are also other recent or forthcoming initiatives that point towards increased storage cooperation between research libraries. These include a recently developed facility for stored material from the State Library of Victoria, located at the University of Ballarat's Mt Helen Campus; and plans that are under way to create a joint storage facility for the University of Sydney and the Australian National University. The Queensland University Libraries Office of Cooperation (QULOC) has also discussed a cooperative storage proposal, in 2006, in response to members concerns about space shortages for local storage.

The implementation of a national repository would not obviate the need for disposal. Indeed its effect would be the opposite, in that libraries would be encouraged to dispose of little-used items once they were assured that safe copies were retained in the repository. The benefits would flow from the far more planned and orderly approach to disposal that would result when libraries had a consistent and predictable national policy and procedure frameworks, from which to manage their local collections. The benefits derived from a fully implemented national repository would include:

- The space and cost savings associated with widespread disposal of rarely used duplicates. The decision to de-duplicate would be taken by individual libraries based on local demand, but libraries would dispose of items safe in the knowledge that there is at least one readily-accessible, secure copy within the national system.
- Libraries having confidence in the long-term conservation of items as a repository would provide best practice with regard to conservation practice supported by relevant professional expertise.
- The efficiencies in storage, discovery and delivery that produce a low-cost document delivery environment, with libraries being relieved of some of the demand to supply copies through inter-library lending.
- Researchers becoming familiar with the services offered by a repository to the point at which it would become their first choice for document delivery requests and in some cases personal visits.

Policy (and other) challenges

With the interest by research libraries in finding a cost-effective solution to their long-term print storage problems, it is a matter of some importance to implement an optimal solution. The proliferation of a series of shared regional stores would provide some relief for participating libraries, but would not produce an ideal solution with regard to matters of storage, discovery or delivery. This requires a high-degree of collaboration with the goal of producing the best possible policy, management and operational framework.

Given the reality of the two existing regional repositories (URRSA and CARM), a decision would need to be made as to whether a single national storage facility is feasible, or whether a federated system of regional sites, based on the two existing repositories, would be preferable. As has been argued elsewhere (Genoni 2007), such a development should follow the Scottish and English models in developing business and governance models that include representation from various library sectors. Although the most immediate demand may come from academic libraries, there is evidence that many state and government libraries also need to claw back space currently used for print storage.

There are a number of other key policy issues that need to be addressed. Perhaps the most critical is around the issue of ceding ownership. A critical decision point for libraries will be whether they insist on retaining ownership, or if they are prepared to cede ownership to a collaboratively or independently owned and managed facility. While the former option has attractions to libraries in terms of maintaining individual collection sizes and institutional asset values, the latter offers substantial savings to the system as a whole, with its capacity to achieve higher shelving densities; to allow for greater de-duplication; and to optimise efficiency in the discovery and delivery of stored items. In the UK the ceding of ownership to the National Research Reserve has been critical to the national storage plan, where it is seen as a means of achieving substantial reductions of locally held stock, while retaining security of access.

Other matters that would need consideration would include the number of items that should be retained within the repository and/or the national collection. The UK National Research Reserve has proceeded on the basis of four copies being retained, but it is possible that this may be reduced in the future. It may well be decided that different categories of material will be treated differently in this regard (for example; Australian and non-Australian items; textbooks and research publications; monographs and journals; material that has a secure digital copy - for example JSTOR titles - as opposed to those that exist in print only).

There are also numerous other challenges of a more practical nature. These include creating a best-practice service environment, which is critical to ensuring that a repository is viewed as a live, active and accessible collection rather than a 'dark store' for unwanted print items. This is important for libraries to have confidence that they can rely upon delivery services and therefore de-duplicate safe in the knowledge that accessible copies are available, and for academics and researchers who need to be assured that access is not dependent on location.

The development of highly efficient procedures would also need to extend to the participating libraries. Their de-selection processes must be accurate and cost-efficient, based on access to accurate and current records of holdings of the repository. This is important in minimising the amount of unnecessary handling of material by the repository of items already in their collection and by the participating library. There may also well be system and data issues that will need to be resolved in order to allow for seamless, federated discovery and delivery, although such challenges are not uncommon and have been met before in developing Australia's bibliographic services.

Such a collaborative development as a national or networked repository would also entail many of the usual challenges inherent in a consortium approach, including setting contribution rates for members and trying to ensure that non-contributory costs (for example, those associated with depositing material) are shared equitably. Consortium negotiations would also need to find a way of providing incentives to contributors and to strike equitable rates for member and non-member libraries using the service.

Conclusion

In their constant battle to find sufficient space for their collections and services, Australian research libraries are caught in a bind. On the one hand, funding institutions increasingly require libraries to live within their existing shell by making smart and cost-efficient use of current space, including downsizing physical collections where possible. On the other hand, users increasingly expect libraries to provide interactive and networked extensions of their learning, research and social spaces; non-serial collections remain intractably physical, and users still anticipate they will find research-quality print-based collections in larger libraries.

Part of the response to this space management challenge should lie in marrying print collections to digital delivery by implementing a national print repository based on international standards of best practice for discovery and delivery. In this way the same digital technologies, which are in part creating the space 'problem', will also help provide a solution. In such an environment, access to, rather than ownership of, legacy print collections will be a necessary and achievable goal for research libraries.

The rising generations of digital natives may no longer have the same expectations that libraries will serve as massive independent warehouses for the research 'long tail', but they will expect seamless digital discovery and delivery of print-based copy. The most effective means by which Australian research libraries can achieve such an outcome - and deflect much of the considerable cost associated with local long-term storage - is to implement a national repository service.

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